Book Review

Brookings Economists Analyze Recovery Problem in U. S.

"The Recovery Problem in the United States." Written by staff members of the Institute of Economics of The Brookings Institution. December, 1936. Publisher: The Brookings Institution, Washington, D. C. Pages: 709. Reviewed by Robert Nixon.

For whom?

For the executive. For the everyday businessman. For everyone who really cares what the recovery problems in this country of ours are, or what might be done about them.

It is not high toned.

No economic Greek in this book. Professional economic terms have been tabooed. It is uniquely readable. It's economics, all right, and from a source which is generally conceded to give careful analyses and unbiased conclusions. But the language is that of the everyday business men.

It is about recovery and where we are now. And how we got here. Where we have come from, and where we are probably headed. And some of the things which can help to get us where we want to go.

It's about better living and the cost of living. About prices, and competition. About the depression, and some of the probable causes. About rising prosperity and the dangers ahead.

THE AUTHORS

Ten specialists wrote it.

Edwin G. Nourse, the Director of Brookings' Institute of Economics, planned and correlated the work as a whole. Different and even opposing viewpoints are at times presented. But the analysis as a whole is remarkably well-knit.

It is long.

An hour for scanning. An evening or two for reading. Or any length of time for real study and detailed consideration. And any one of these approaches to the book will offer a wealth of worthwhile information.

For each paragraph is summarized, each chapter is summarized, and a summary of the conclusions in regard to U. S. recovery is given in the last chapter. Italics are used freely and helpfully, especially for enumerations of the pros and cons on the various issues discussed.

And charts, and tables, and statistics.

Bar graphs, line graphs, tables of all kinds, and comparative curves—with colors used sparingly where needed for emphasis or differentiation. They (the charts, tables, graphs, tabulations) are well chosen, and often make clear at a glance the trend, or situation, or comparison to be considered.

Starting with the war and the twenties, the first chapter pictures briefly the way in which the economic structure of the world, delicately balanced machine, was thrown completely out of gear.

Following the war, with its trade and financial changes, financial disorganization, and territorial readjustments, we jumped up and ran during the twenties, letting our fundamental economic sickness go from bad to worse, definitely assuring the eventual economic collapse which came at the end of that hectic decade.

INTERNATIONAL ASPECTS

Creditor nations lending huge amounts to debtor nations which were nearing bankruptcy, increasing trade barriers, few national budgets in balance, private debt gone haywire, income highly concentrated—these and other developments of the twenties are traced as the background of the depression.

The depression was international and fundamentally so.

No nation can live alone and like it in this age, is Brookings' viewpoint. The course of the depression, its world impact, extent, and character are described in some detail.

Example of points brought out in this depression story: suspension of gold payments are compared to the results of a bank run; once general loss of confidence has set in, the failure of a country to keep on the gold standard did not necessarily mean either a weak monetary system to begin with or an attempt to gain a special advantage over other countries.

Anent government and recovery, every major nation tried vigorously to bring it about.

Measures usually tried affected (1) money and credit; (2) the budget; (3) labor and unemployment; (4) agriculture; (5) industry; (6) foreign trade. All major nations have seen a substantial measure of recovery. No relation is apparent between the degree of recovery in various countries and the amount spent or the particular program adopted.

Should governments keep hands off? None did so in the past depression, so there is no basis of comparison to be found there. Wherefore Brookings analyzes individual measures, but doesn't draw a conclusion on that specific question.

DEPRESSION DEPTHS

How far down did we fall?

In employment? 15,400,000 "man-years" of work lost forever during '32 or 39% of the total available.

In production? To about one-half the manufacturing output which normal growth should have given 1932. Corporate financing? New financing dropped from more than 700 million in '29 to less than 20 million in '33.

Foreign trade? Both imports and exports declined to 30% of 1929 level. The causes—the characteristics—the interwoven results are in the book.

How far back have we come?

Employment? 23% still unemployed in the last quarter of '36.

Production? To 70% of 1929 (middle of '36).

Corporate financing? More than 400 million for the year 1936, based on averages of the first eight months.

Foreign trade? To 47% of '29 by the end of 1935.

But all this is changing every month now. Fact is, with the continued rapid upswing of business, the picture changes almost daily.

REASONS FOR RECOVERY

The story behind this continuing rise—the reasons why—are vividly presented by Brookings.

Number one, plenty of loanable funds available at low rates of interest.

Number two, private indebtedness is 'way down compared with three years ago.

Three, wages have gone up faster than prices, giving an increasing purchasing power to wage earners, which is vital to prosperity.

Four, improved balance between agriculture and industry.

Five, uncertainty about monetary and banking policies has practically disappeared.

Several other favorable trends are enumerated, described, dissected. Dangers too: problems involved in maintaining the fiscal stability of government, forces of private enterprise pushing towards inflation, labor difficulties, haphazard industrial legislation, and continuing unstable elements in the foreign situation.

SUGGESTED PROGRAM

Instructive and to-the-point is the integrated program which Brookings offers for consideration:

A balanced federal budget. Re-establishment of stable foreign exchanges. Extension of reciprocal trade agreements. The keeping of favorable ratio between wage and price increases. Maintaining present average hours of labor. Doing away with public and private practices which tend to curb production efficiency. Bringing agriculture back to abundant production basis to supply the expanding market.

Worthy of consideration just as a matter of good business. Brookings says the huge military programs threaten the peace of the world, endanger the foundations of the economic system, and make no permanent contribution to recovery.

Market opportunities?

To put us just up to even with 1929 housing facilities—by 1941, on a per capita basis, here's what it will take: annual construction around 20% above the 1925-29 average, or annually three times the construction in 1936.

In other words, a five-year average of 900,000 housing units annually: at present cost, four billion a year. Another billion for repairs. And this is Brookings' estimate of the needs for just non-farm residential construction only—just to equal the 1929 average housing per person.

And in commercial construction requirements are roughly estimated at 10 to 11 billions annually during these next five years. What a market for air conditioning! and for refrigeration!

The analysis of this market, of this recovery of ours at the present stage, has been so understandably presented by Brookings—in "The Recovery Problem of the United States"—that the book is worth the attention of every business man who expects to profit from coming prosperity.

Plans to Combat Cleveland's 'Million-Dollar Racket' Told at Association Dinner

(*Concluded from Page 1, Column 3*)

cured by purchasers whose friends could secure discounts from dealers they knew or by other methods common to unfair trade practices, he declared.

In the first four months of this year, Mr. Jones stated, about $2,100,000 worth of electric refrigerators have been sold in Cleveland, and an average of 10% price-cutting has represented a loss of $210,000 in legitimate business to appliance dealers. Last year, $6,000,000 worth of electric refrigerators were sold in the Cleveland area with fully $600,000 of this amount representing discounts, he said.

F. L. Grdina, president of the association, declared that Cleveland appliance dealers are planning to adopt a suggested series of trade policies designed to eliminate price-cutting on all types of appliances. These will be sponsored by cooperation between several trade associations in a household appliances show soon to be held here.

In urging adoption of a code of ethical trade practices, Mr. Jones noted that the buying public is educated to "tricks" for obtaining discounts and forcing dealers to compete against each other in "beating down" prices. These same tricks can be "educated out" of the public mind by enforcement of legitimate practices and establishment of retail prices, he declared.

At the meeting it became known that the recently organized Cleveland Wholesale Appliance Association plans to draft fair trade standards on each type of major appliance. These standards will be made known to each distributor, who, in turn, will present them to his dealers for voluntary adoption. The dealer association will then cooperate in policing these standards, it was said.

Outlining the voluntary system by which the wholesale association and dealers' group will cooperate to discourage price cutting, George W. Walker, secretary of the CRADA, said that each member will soon be furnished with blank forms on which to register complaints of unfair trade practices which will be investigated by officials of the association and disinterested parties.

520 Hotpoint Water Heaters Ordered for Housing Unit

CHICAGO—An order for 520 Hotpoint automatic electric water heaters for Green Hills Suburban project near Cincinnati has been placed with Edison General Electric Appliance Co. by the Federal government.

An order for 200 Hotpoint water heaters for the government's rural resettlement project at Trussville, Ala., was placed several weeks ago.

The Green Hills order closely followed the award to Hotpoint of a contract for 8,480 electric ranges, said to be the largest single electric range order ever placed, for installation in low-rent housing projects throughout the country.

2,500 Visitors a Day Attend Ft. Wayne Home Show

FT. WAYNE, Ind.—Visitors averaging more than 2,500 per day attended the Food Show & Home Appliance Exhibit at Shrine auditorium March 30 to April 3. Firms demonstrating electrical appliances included:

Northern Indiana Public Service Co., City Light & Power Co., Hot-Point Store, Indiana Service Corp., Stucky Bros., W. J. Barth Co., and Samsen Radio & Electric Co.

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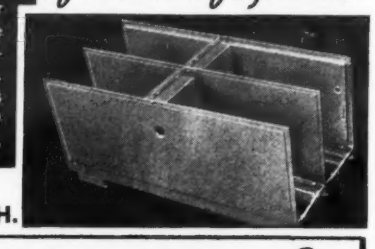
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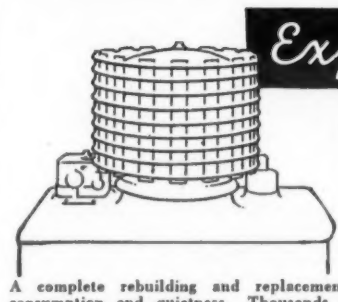
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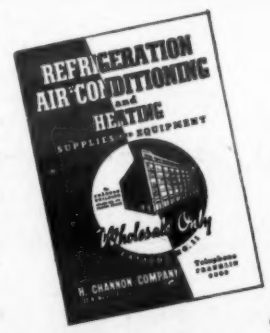

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Frigidaire Will Put $4,000,000 In 2 New Plants

Greatest Expansion Since 1926; One Building 700 Ft. Long

DAYTON—Greatest expansion of F idaire's manufacturing facilities since construction of the present Moraine City, Ohio plant in 1926 will be started within a few weeks when erection of two new factory buildings is commenced at Moraine City. Total expenditure will be more than $4.000,000, officials of Frigidaire division, General Motors Corp., have announced.

Besides the new plant construction, enlargement and rearrangement of several departments at Moraine City will be accomplished as a part of the same project, it is said.

In preparation for 1938 production activities, a new building 700 ft. long, 80 ft. wide, and two stories high will be constructed facing west on Springboro Pike, across the road and paralleling the present plant.

This structure will be of modern-

(Concluded on Page 2, Column 3)

Cabinet Plant Opening Celebrated by Sunbeam

EVANSVILLE, Ind. — Sunbeam Electric Mfg. Co.'s plant here was visited by more than 10,000 persons during ceremonies, May 6 and 7, when a new factory for refrigerator cabinet production was dedicated.

Principal guest speaker was General R. E. Wood, president of Sears, Roebuck and Co. Other speakers were W. A. Carson, president of Sunbeam, Louis Ruthenburg, president of Servel, Inc., and George Boehne, president of the Evansville Chamber of Commerce.

Houston Has 18 Installations in April; Several Buildings Conditioned in Tulsa

HOUSTON, Tex—Eighteen installations of air-conditioning equipment were made in this city during April, according to statistics compiled by the Houston Light & Power Co.

Five residential jobs were included in the April total, largest of these amounting to 10 tons, and going into the home of W. M. Rice. Another, for 7½ tons, was installed in the home of L. M. Robertson.

Two theaters were conditioned during the month, one system, totaling 65 tons, being installed in the Blue Bonnet, and another, totaling 50 tons, in the St. Elmo.

A 50-ton system was put in operation at River Oaks country club, and a 48-ton job was installed in the addition to the Battlestein, Inc., establishment.

(Concluded on Page 9, Column 4)

TULSA—Thirteen major installations totaling approximately 2,500 tons refrigeration have helped this city to get off to a flying start on its 1937 air-conditioning program.

Including in the jobs contracted for this spring are the 14-story Philcade building and the 24-story Philtower building, the 15-story National Bank of Tulsa building, and three 10-story structures, the Palace,

(Concluded on Page 9, Column 2)

Capital Code Hearings To Start June 1

WASHINGTON, D. C.—Opening hearing on the proposed Refrigeration and Air-Conditioning Installation Code for the District of Columbia will be held starting at 10 a.m. Tuesday, June 1 in the board room, District building, in this city.

Purpose of this first hearing, according to officials in charge, is to entertain constructive discussion, and personally presented briefs will be received. Briefs which are mailed in will not be given any consideration at this first hearing, according to the official announcement.

During this first interview with officials in charge of the code, oral or written questions as to the provisions of the tentative code will not be answered. Any requests for information about the hearing should be addressed to Capt. H. P. Tansey, assistant engineer commissioner, District of Columbia, District building, Washington.

Heating & Ventilating Exposition June 24-28

NEW YORK CITY—Fifth International Heating and Ventilating Exposition, known also as the Air Conditioning Exposition, will be held at the Grand Central Palace here January 24-28, 1938. Exhibitors have already contracted for a major portion of show space on the three exposition floors, officials say.

The 1938 Exposition will feature the engineering response of the industry to increased building activity which is in evidence in practically every section of the country. Charles F. Roth, who supervised arrangements for previous expositions, will be in charge.

Principal sections of the Exposition include the following: steam, air, and hot-water heating; fans, blowers, and ventilating ducts; insulation; instruments; tools and shop equip-

(Concluded on Page 16, Column 5)

Westinghouse Licensed By Auditorium

EAST PITTSBURGH — Westinghouse Electric & Mfg. Co. has become a general licensee under Auditorium patents, and is authorized to install, or grant permission to others to install, central-station systems embodying Auditorium-controlled inventions.

Under its license, Westinghouse also has the right to manufacture and sell unit conditioners utilizing these same patents.

Other general licensees under Auditorium patents include American Blower Corp., Buffalo Forge Co., Carrier Corp., Frick Co., General Electric Co., J. O. Ross Engineering Corp., Cooling & Air Conditioning Corp. (division of B. F. Sturtevant Co.), and York Ice Machinery Corp.

Half-Million Spent On '36 Advertising Of Conditioners

DETROIT—Twelve leading manufacturers of air-conditioning equipment spent $506,338 for advertising in national magazines during 1936, according to figures compiled in a survey completed recently.

Heading the list of spenders for 1936 was American Radiator Corp., with expenditure of $176,050. The company led also in the number of publications used, its total being 14.

York Ice Machinery Corp. was first among companies featuring refrigeration equipment, its total for the year being $97,910, distributed among four publications.

Airtemp, Inc., spent $67,830 in advertising its air conditioners and home-heating systems in four national magazines; Fox Furnace Co. spent $38,855 on Sunbeam air-conditioning equipment, the total being spread over three publications.

Carrier Corp. spread its $29,459 of air-conditioning space through four publications. General Electric Co.

(Concluded on Page 9, Column 1)

McLeod Is Copeland General Manager

DETROIT—As a further step in the expansion of Copeland Refrigeration Corp.'s national distributing organization, President Dallas E. Winslow has announced the appointment of J. D. McLeod as vice president and general manager of the company.

Mr. McLeod came to Copeland as general sales manager last December

(Concluded on Page 2, Column 2)

NY Dept. Stores Told to Remove Gas from Units

Fire Department Orders On Refrigerators Made Under Old Code

NEW YORK CITY — Department and furniture stores here are being ordered by the Fire Department of the City of New York either to remove the refrigerant from electric refrigerators displayed on their floors, or to enclose the units in a separate room with close-fitting doors.

The order, signed by Deputy Fire Commissioner Francis X. Giaccone, was received last week by several of the larger Brooklyn and Manhattan stores, and will be sent to all stores not complying with the current refrigerating code. It reads in part as follows:

"An inspection . . . shows that the following must be done to conform with Fire Department regulations:

"1. Either remove the refrigerating chemical from each refrigerating system, or provide tight partitions with closely fitting self-closing doors for each room wherein such system is offered for sale or for use, or demonstrating purposes."

Under the law, stores have 30 days in which to appeal the order to the Board of Appeals, filing a copy of the appeal with the Fire Commissioner. Several stores indicated that they would do this.

Issuance of the order is based on section 220, paragraph (a) of the

(Concluded on Page 2, Column 1)

Finance Company and Dealer Share Blame In Misrepresented Time Sales, Judge Rules

BUFFALO—In a decision hitting conditional sales contracts containing clauses in such fine printing that they can be read "only by the aid of a magnifying glass, and comprehensible only to a commercial lawyer," Judge Robert J. Summers has ruled that the seller, and not the purchaser, must suffer the effects of reputed misrepresentation by salesmen.

The decision affects thousands of instalment purchases in the refrigeration and other fields, and will probably be the subject of a test in the higher courts. The decision came in the case of the Buffalo Industrial Bank, holder of a note which had its inception in a conditional sales contract between the seller of an oil stove, the Pioneering Air Conditioning Co., and the buyer, Clement DeMarzio.

After tracing the history of the transaction, which involved a $10 down payment on the stove, the buyer's contention that the stove did not perform the standard set by the salesman; repossession of the stove; its resale at a low figure and efforts of the note holder to collect the difference between original selling price of the stove and the total of the down payment and its sale price after repossession, Judge Summers was unwilling to divorce the finance company from the sales department of the dealer.

"It is obvious that here we have a factual enterprise in which, so far as conditional sales are concerned, the management rests in the far larger part in the hands of the finance company," Judge Summers said. "The finance company and the merchant-sellers are as a fact engaged in one business . . . useless one without the other. To pretend that they are separate and distinct enterprises is to draw the veil of fiction over the face of fact.

"The finance company, being a de facto part of a great conditional-sale commercial machine, should be no more allowed to escape from the effects of the misrepresentation of a salesman than is the merchant himself. This rule imposes no great hardship on the finance company.

"Zeal is shown in investigating the credit of the buyer; let zeal likewise be expended in investigating the good faith of the salesmen. If any hardship is imposed by this rule, it is only the hardship that has always followed the refusal of the law to permit the divorce of honor from enterprise."

Decatur, Ill. Firm Finds Profit in Making And Installing Air-Conditioning Ductwork

DECATUR, Ill.—Specializing in the construction and installation of ducts for air-conditioning systems is the answer to the question worked out by B. M. Dennis & Son, local hardware firm, of how it might tap a new market to increase sales.

Checking on press notices, building permits, chamber of commerce announcements, tips and leads obtained both from the firm's customers and from other contact sources which it has established during the 56 years that it has been in business, are the chief methods which Dennis & Son company follows to obtain contracts for duct-system jobs.

"When we hear that someone around here is planning to install an air-conditioning system, we get busy and check up to verify the information," Mr. Dennis declared. "Then, if we are satisfied that it's authentic, we contact Field & Shorb Co. (refrigeration and air-conditioning firm) who make arrangements to have an air-conditioning engineer prepare a survey, and draw up specifications for the job.

"If the deal goes through," he added, "the Field & Shorb Co. calls us in to figure on the ductwork, or gives us the contract for it."

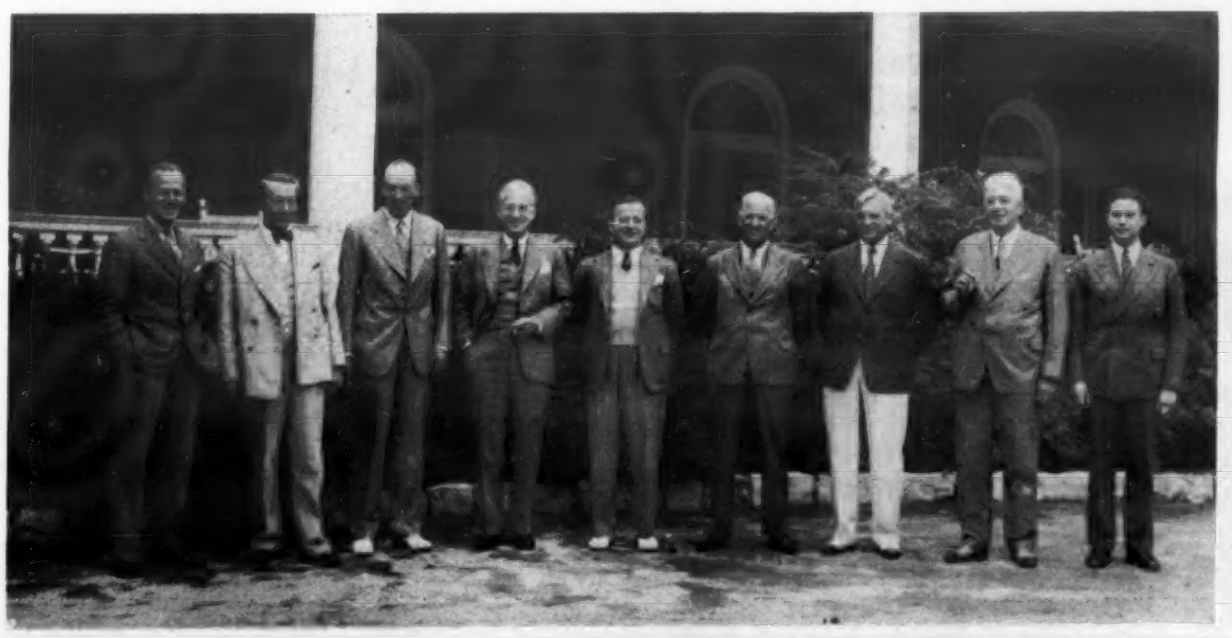
One of the most recent contracts which the Dennis & Son company secured through its cooperative arrangement with the Field & Shorb Co., was that to supply the duct system for the air-conditioning installation in the F. W. Woolworth Co. Decatur store.

Equipment was installed to cool the entire first floor of the building which measures 142 ft. in length, 36 ft. in width, and in which the ceiling is 14 ft. high. The air conditioning provides an average temperature of 80° F. in weather having a dry-bulb temperature of 95° F. and wet-bulb temperature of 75° F.

Ducts, installed by the Dennis firm,

(Concluded on Page 17, Column 1)

Air Conditioning Executives at Hot Springs, Va.



The above group includes only a few of the executives who attended the ACMA meeting in Hot Springs, Va., May 14 and 15. See other pictures on following pages. Above, from left to right: Don E. French, vice president, Carrier Corp.; J. A. Harlan, commercial sales manager, Kelvinator Corp. and newly elected president of the Air Conditioning Manufacturers Association; W. W. Rhodes, sales manager, Kinetic Chemicals, Inc.; J. M. Fernald, general manager, Baker Ice Machine Co.; J. J. Donovan, manager, Air Conditioning Department, General Electric Co.; Herman D. Jakes, sales manager, Aerofin Corp.; Willis H. Carrier, chairman of the board, J. I. Lyle, president, and Herman Seid, patent attorney, of the Carrier Corp.

Evansville Celebrates Completion of Million Servel Electroluxes

EVANSVILLE, Ind. — Industrial and civic organizations of this city, under the leadership of the chamber of commerce, joined with a large portion of Evansville's populace last Saturday (May 22) in celebrating production of the one-millionth Servel Electrolux refrigerator which rolled off the company's assembly line Thursday, May 20.

Highlight of the day's activities was a parade of approximately 100 floats and scores of other units including uniformed bands and marching groups representing schools, military, and fraternal organizations.

George S. Jones, Jr., vice president and general sales manager of Servel, served as marshal of the Servel section of the parade. One of the floats in this section bore H-800, the one-millionth Electrolux, equipped with gold trimmings and surrounded by a guard of honor.

Another Servel float carried Marjorie Duncan, named by employes as Miss Servel of 1937, accompanied by her maids of honor, Dathol Diekman and Emma Flentke. Servel President Louis Ruthenburg, accompanied by civic and county officials as well as other factory executives, also was in this section.

At Bosse field, where the parade ended, 10,000 Servel workers, their families, and guests, were served refreshments and entertained by the management, under the direction of Ed DeGroote, Servel recreation director.

Actual completion of H-800 on Thursday was marked by blasts from the factory whistle and explosion of a bomb on the river front as Chief Inspector Carl Baumhofer yanked off the final tag signifying that the unit had passed inspection satisfactorily.

Congratulatory messages to the Servel organization were printed in local newspapers through sponsorship of the city's business and legislative organizations.

N. Y. Stores May Appeal Refrigerant Ruling

(*Concluded from Page 1, Column 5*)
existing code governing refrigerating systems, which reads as follows:

"Each refrigerating machinery room in which an irritant refrigerant is employed must be provided with tight fitting self-closing door or doors and have no partitions or openings that will permit passage of the refrigerant to other parts of the building."

Meals Go Musical

This new Crosley refrigerator has a built-in radio, so the modern housewife can swing while she sautes.

McLeod's Authority Extended at Copeland

(*Concluded from Page 1, Column 4*)
from Chevrolet Motor Co., where for more than 14 years he was special representative, regional sales promotion manager, Detroit city sales manager, and zone manager at Flint.

In addition to his merchandising and sales management experience, Mr. McLeod brings to his new position practical shop experience as well, having served in various production capacities with the Chevrolet and Buick divisions of General Motors Corp. He has also been associated with two engineering companies in an official capacity.

In his previous position as Copeland general sales manager, Mr. McLeod is credited with being largely responsible for a notable increase in the company's dealer organization, as well as for the introduction since the first of the year of a new line of home laundry equipment and electric water coolers.

Cafeteria in Frigidaire's New Building To Be Air Conditioned

(*Concluded from Page 1, Column 1*)
istic design in brick, concrete, and steel construction and will house the offices of the Moraine City manufacturing division of Frigidaire. The building will have about 120,000 sq. ft. of floor space.

In addition, this new structure will house the personnel and purchasing departments, time office, process control laboratories, appliance engineering division, domestic science laboratory and kitchen, maintenance department, pattern shop, and a number of other operations not directly engaged in production of Frigidaire products.

Another structure, 280 ft. by 80 ft., will be built as a partial second story atop the present main building immediately west of the center for an employes' cafeteria.

This building will be completely air conditioned for the comfort of cafeteria patrons and will have an orchestra stage and public address system with loud speakers built into the walls. The dining room and kitchen will cover 23,800 sq. ft. of floor space.

Beneath Springboro Pike, the main north-south traffic artery serving the Moraine City plant, leading from a new parking area under the new building and into the center of the main plant, will be a 20-ft. tunnel 350 ft. long through which employes will enter and leave the factory.

This tunnel will eliminate traffic hazards encountered by employes crossing Springboro Pike, Frigidaire officials say, when beginning or leaving work at shift changes.

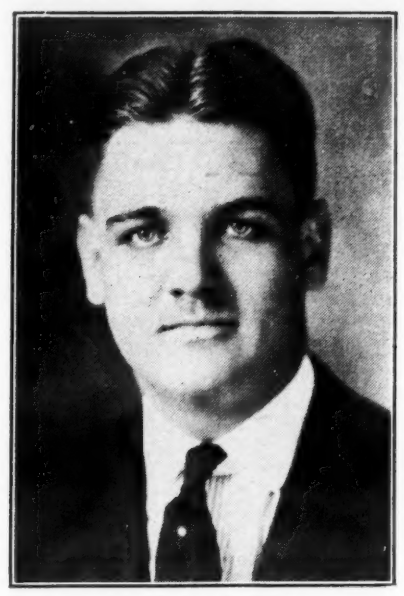
Parking arrangements will be such that traffic may flow readily during shift changes without hazard to employes who are entering or leaving the factory on their way to and from work. At present, nearly 9,000 of Frigidaire's 13,000 Dayton employes are stationed at the Moraine City plant.

With structural and layout changes at Moraine City, several minor arrangements will be made at the Taylor St. plant in Dayton, and several departments now located there will be moved to Moraine City. The fifth floor of the Taylor St. general office building will be vacated to permit location of additional office facilities.

Completion of the new construction work is anticipated before production of 1938 products is commenced.

G-E Range Section and Sales Managers

W. T. CHRISTY



J. R. POTEAT

Christy to Manage G-E Range Section

CLEVELAND—W. T. Christy will become chairman of the management committee and manager of the range and water heater section of the appliance and merchandise department of General Electric Co. June 1, and J. R. Poteat will continue as sales manager of the section, according to George Chapman, manager of the specialty appliance division.

Mr. Christy has been southeastern district sales manager and southern division supervisor of the Edison General Electric Appliance Co., his office having been in Atlanta. Under his supervision the southeastern district grew from the smallest to the largest in the company in dollar volume.

He joined the Edison General Electric Appliance Co. in 1921, selling electric ranges in Detroit and Minneapolis. In 1922 he entered business for himself in Dallas as vice president of the United Supply Co.

His next position was as salesman of motor appliances for the Hamilton Beach Co. A few months later he rejoined Edison General Electric, and has remained with the company ever since.

Mr. Poteat has served in his position since the section was organized in January, 1933. He had joined the Hotpoint organization in 1927, working on factory reorganization, cost reduction, and general process development. Later he was transferred to the water heater sales department, after which he entered range sales.

Strong Named Appliance Head for Rodefeld Co.

INDIANAPOLIS—Arch R. Strong, once with State Radio Co. here and more recently radio sales manager for Pritzlaff Hardware Co., Milwaukee has been appointed general manager of the appliance division of Rodefeld Co., distributor of Universal refrigerators, with branch offices in Greensburg and Richmond.

Refrigeration PARTS & TOOLS

Bracket strips	Pinchoff tools
Bracket adapters	Flaring tools
Flange adapters	Tube benders
Clamps	Valve needles
Tee wrenches	Replacement shafts

Above is only partial list of parts and tools which we manufacture and sell thru legitimate jobbers.

Send for new catalog

Superb Metal Products Co.
6868 S. State St., Chicago

IT'S NEW
McQUAY
COMFORT MASTER

LOW BOY FLOOR TYPE COMFORT COOLER now in production—Dual purpose Comfort Cooler for offices, and homes. Can likewise be used for small table, telephone, books, etc. Priced very low. Write, wire, or phone for specifications.

WRITE for New Catalogs on McQUAY Unit Coolers, Comfort Coolers, Cabinet Concealed Radiation, Refrigeration Coils, Ice Cube Makers, Air Conditioning Coils, Blast Coils, Combination Heating and Cooling Units, Suspended and Floor Type Blower Coolers, Cabinet Floor Type Room Coolers, Etc.

McQUAY Inc.
MINNEAPOLIS MINNESOTA

Wolverine Seamless Copper Refrigeration Tubing is MADE CLEAN . . . SEALED CLEAN . . . and DELIVERED CLEAN. It's a pleasure to work with this dependable, high quality product.

Every step in its manufacture is time-proved, to give you the best tubing for your job. The walls of Wolverine deoxidized, dehydrated seamless Copper Refrigeration Tubing measure a **full** .035 (20 Stubs gauge). 99.9% pure electrolytic copper and a bright annealing process are used to make this tubing uniformly soft for easier bending, cutting and flaring.

Made to A. S. T. M. specifications

ASK YOUR JOBBER

He carries a complete stock of Wolverine Copper Tubing for Refrigeration and Air-Conditioning.

WOLVERINE TUBE COMPANY
1411 CENTRAL AVE. DETROIT, MICH.

THERE IS ONLY ONE MEANING TO *this trend toward C-H Control*

FAMOUS REFRIGERATOR NO. 1
FAMOUS REFRIGERATOR NO. 2
FAMOUS REFRIGERATOR NO. 3
FAMOUS REFRIGERATOR NO. 4
FAMOUS REFRIGERATOR NO. 5

Check These Outstanding Features
- 4 models meet nearly every need
- Famous C-H overload protection
- *Dependable* C-H settings stay "set"
- All wanted advantages: cold control; defrost position; adjustable temperature and pressure range; fits large or small openings; mounts horizontal or vertical; simple connections

It's not even a trade secret . . . the number of new refrigerators coming out with Cutler-Hammer Control as standard. The vote has been cast; it is heavily in favor of Cutler-Hammer.

The real significance for the service man is what must have gone on before these refrigerators standardized on C-H. Think of the facilities the manufacturer has for thorough and exhaustive testing. Put yourself in his place and see what the decision in favor of C-H means.

And what is best for the box is best for the service man. That's why more and more service men are standardizing on Cutler-Hammer Refrigeration Control for Replacement use. It's the *only* control that gives him the standard C-H features of design. Write for literature. CUTLER-HAMMER, Inc., *Pioneer Manufacturers of Electric Control Apparatus*, 1362 St. Paul Avenue, Milwaukee, Wis.

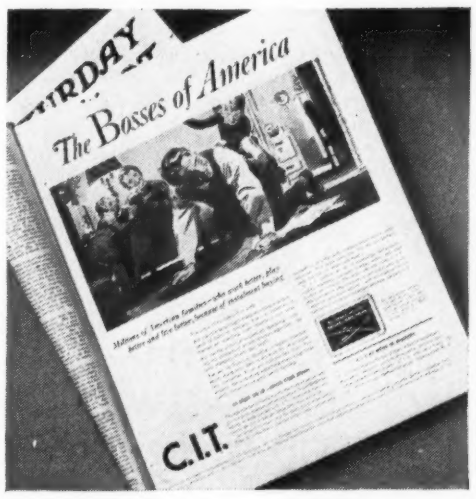
CUTLER-HAMMER
REPLACEMENT CONTROL
C-H

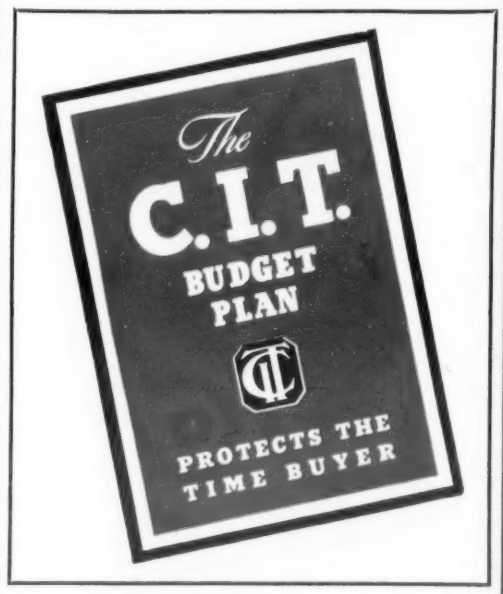
Millions Want to Buy on Time

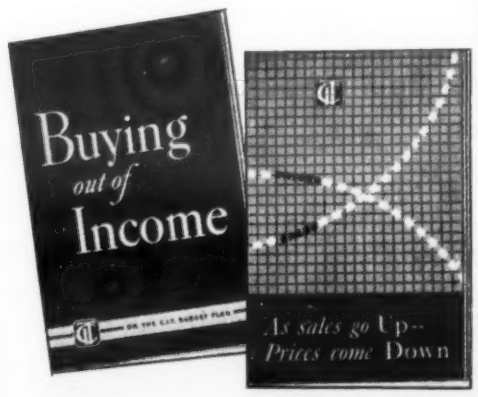
THEY ALL KNOW C. I. T.

Consumer Advertising

In the Saturday Evening Post, Collier's and Time, C.I.T. is printing friendly messages on the story of instalment purchasing. It tells about the Budget Plans and how refrigerators, radios, automatic heating and other equipment may be acquired by the average family.







Selling Aids to Help You

The point-of-sale display piece shown above, and others, are available for dealer use. The booklets —"Buying Out of Income" and "As Sales Go Up—Prices Come Down" are being offered the public through C.I.T. advertising. These selling aids help dealers who sell on the C.I.T. Budget Plan.

Prompt Service

More than 175 local offices in the United States and Canada

Every office listed below gives *complete* full-time localized wholesale and retail financing service plus the many advantages of C.I.T.'s ample resources and nation-wide experience

EASTERN DIVISION

Office	*Address*	*Phone*
ALABAMA, Birmingham	2009 Third Avenue South	3-2108
Mobile	First Nat'l Bank Bldg. Annex	Dexter 923
Montgomery	8 Commerce Street	Cedar 4912
CONNECTICUT, Bridgeport	945 Main Street	Bridgeport 4-6105
Hartford	410 Asylum Street	2-1127
New Haven	149 Temple Street	6-3161
DELAWARE, Wilmington	901 Market Street	4376
DIST of COL'BIA, Washington	815 17th Street, N. W.	National 1853
FLORIDA, Jacksonville	118 West Adams Street	5-4038
Miami	600 Biscayne Boulevard	3-3336
Orlando	102 South Orange Avenue	5223
Tampa	502 Stovall Professional Bldg.	Main 8031
West Palm Beach	910 Comeau Bldg.	6115
GEORGIA, Atlanta	223 Peachtree Street	Walnut 2756
Augusta	805 Broad Street	2672
Rome	6 West Fifth Avenue	421
Savannah	Savannah Bk. & Tr. Bldg.	2-2161
KENTUCKY, Lexington	709-710 City Bank Building	4630
Louisville	305 W. Broadway	Jackson 6244
(see Central Division)		
MAINE, Bangor	84 Harlow Street	6448
Portland	477 Congress Street	3-5685
MARYLAND, Baltimore	Charles & Preston Streets	Vernon 2700
Cumberland	7 Centre Street	462
Hagerstown	74 W. Washington Street	225
MASSACHUSETTS, Boston	674 Commonwealth Avenue	Commonwealth 4600
Springfield	146 Chestnut Street	6-0320
Worcester	390 Main Street	Worcester 5-2521
NEW HAMPSHIRE, Manchester	Kennard Bldg., 1008 Elm St.	1835
Portsmouth	3 Pleasant St.	2600
NEW JERSEY, Camden	300 Broadway	Camden 6885
Jersey City	Labor Bldg., 26 Journal Sq.	Journal Sq. 2-1244
Morristown	10 Park Place	Morristown 4-2229
Newark	11 Hill Street	Market 2-6200
Paterson	232 Market Street	Lambert 3-7870
Perth Amboy	Perth Amboy Nat'l Bank Bldg.	Perth Amboy 4-4466
NEW YORK, Albany	75 State Street	4-0191
Bay Shore, L. I.	First Nat. Bk. & Tr. Co. Bldg.	3030
Binghamton	86 Court Street	2-6448
Bronx	2488 Grand Concourse	Fordham 4-0500
Brooklyn	1 Hanson Place	Sterling 3-5900
Brooklyn	1600 Kings Highway	Esplanade 5-4400
Buffalo	220 Delaware Avenue	Cleveland 8630
Glens Falls	201 Rogers Bldg.	2-1171
Hempstead, L. I.	250 Fulton Avenue	Hempstead 7400
Jamaica, L. I.	90-04 161st Street	Republic 9-3700
Jamestown	3rd & Cherry Sts.	7-137
Mt. Vernon	140 East Third Street	Fairbanks 4-0730
Newburgh	Newburgh Savings Bank Bldg.	4510
New York	250 West 57th Street	Columbus 5-6600
Poughkeepsie	11 Market Street	5080
Rochester	154 East Avenue	Stone 2578

Office	*Address*	*Phone*
NEW YORK (Cont.)		
Syracuse	224 Harrison Street	2-0461
Utica	187 Genesee Street	4-2148
Watertown	200 Washington Street	2001
White Plains	31 Mamaroneck Avenue	Fairbanks 4-0113
NORTH CAROLINA, Asheville	New Medical Bldg.	5870
Charlotte	112 So. Tryon Street	3-5112
Greensboro	114 North Elm Street	6127
Hickory	1036-13th Street	203
Raleigh	15 W. Hargett Street	5170
Salisbury	132 N. Main Street	516
Wilson	113 East Nash Street	722
OHIO, Akron	9 South Main Street	Hemlock 9169
Canton	120 Tuscarawas St., West	Canton 7136
Cincinnati	107 East Fourth Street	Parkway 1666
Cleveland	1621 Euclid Avenue	Prospect 3040
Columbus	150 East Broad Street	Main 5147
Dayton	25 South Main Street	Adams 4258
Springfield	8 West Main Street	Main 717
Toledo	410 Huron Street	Main 6240
Youngstown	Union National Bank Bldg.	6-2216
Zanesville	Fourth & Market Sts.	Main 1844
PENNSYLVANIA, Altoona	1214 Eleventh Avenue	9421
Erie	Erie Trust Building	2-2140
Harrisburg	216 Locust Street	7209
Philadelphia	121 North Broad Street	Bell-Locust 7462 Keystone-Race 5884
Pittsburgh	5648 Friendship Avenue	Montrose 1700
Reading	42 S. Fourth St.	3-4274
Scranton	Chamber of Commerce Bldg.	Scranton 3-1107
Wilkes-Barre	2-18 S. Franklin Street	3-2181
RHODE ISLAND, Providence	15 Westminster Street	Gaspee 3776
SOUTH CAROLINA, Charleston	18 Broad Street	1601
Columbia	1400 Main Street	Main 4373
Florence	200 West Evans Street	1272
Greenville	Peoples Nat'l Bank Bldg.	3121
Hartsville	Bank of Hartsville Bldg.	466
Spartanburg	509 Andrews Bldg.	782
TENNESSEE, Chattanooga	514 Hamilton Nat'l Bk. Bldg.	6-1163
Johnson City	100 Spring Street	5232
Knoxville	612 South Gay Street	2-5183
Nashville	119-7th Avenue, North	6-8157
(see Central Division)		
VERMONT, Montpelier	52 State Street	900
VIRGINIA, Norfolk	229 West Bute Street	2-2353
Richmond	201 North Fourth Street	2-4725
Roanoke	Col. Amer. Nat'l Bank Bldg.	8507
WEST VIRGINIA, Beckley	Raleigh County Bank Bldg.	476
Charleston	100 Capitol Street	Capitol 21-181
Clarksburg	Main & South Third Streets	3910
Huntington	Fourth Ave. at 11th St.	8167
Wheeling	12th and Chapline Streets	Wheeling 4914

CENTRAL DIVISION

ARKANSAS, Little Rock	Wallace Building	4-8501
COLORADO, Denver	13th and Broadway	Keystone 7142
ILLINOIS, Carbondale	206 W. Main Street	246
Chicago	333 North Michigan Avenue	Randolph 8580
Chicago	1523 E. 53rd Street	Dorchester 4720
East St. Louis	417 Missouri Avenue	5090
Peoria	301 South Adams St.	9121
Rockford	Talcott Bldg.	Main 2709
INDIANA, Evansville	416 Main Street	6168
Fort Wayne	116 E. Berry Street	Anthony 3388
Indianapolis	320 No. Meridian Street	Riley 5382
Richmond	10 North Seventh Street	Richmond 7760
IOWA, Cedar Rapids	Higley Building	5515
Des Moines	Hubbell Building	3-3105
KANSAS, Wichita	Fourth Nat'l Bank Bldg.	3-0288
Great Bend	301 Cork Building	1091
KENTUCKY, Paducah	Citizens Savings Bank Bldg.	390
(see Eastern Division)		
LOUISIANA, New Orleans	203 Carondelet Street	Raymond 1184
MICHIGAN, Detroit	7310 Woodward Avenue	Madison 8800
Grand Rapids	5 Lyons Street, N. W.	9-4591
MINNESOTA, Minneapolis	821 Marquette Ave.	Atlantic 4361

MISSOURI, Cape Girardeau	H & H Building	888
Kansas City	10 East 17th Street	Victor 8005
St. Louis	3713 Washington Blvd.	Franklin 5600
NEBRASKA, Lincoln	206 S. 13th Street	B 2536
Omaha	510 Keeline Bldg.	Atlantic 1214
OKLAHOMA, Oklahoma City	407 N. Harvey Street	2-4261
Seminole	315 E. Broadway	475
Tulsa	Commercial Building	4-5175
TENNESSEE, Memphis	46 N. Third Street	6-7682
(see Eastern Division)		
TEXAS, Abilene	1049 N. Third Street	5255
Amarillo	107 Third Street	2-3295
Beaumont	490 Orleans Street	4144
Dallas	1700 Patterson Avenue	7-5731
El Paso	109 N. Oregon Street	Main 4870
Fort Worth	W. T. Waggoner Bldg.	2-5388
Houston	1006 Main Street	Fairfax 3161
Longview	McWilliams Bldg.	2320
McAllen	1301 Beaumont Avenue	864
San Antonio	115 W. Travis Street	Fannin 2356
Texarkana	209 Pine Street	488
WISCONSIN, Milwaukee	744 North Fourth Street	Marquette 1656

WESTERN DIVISION

ARIZONA, Phoenix	802 Title and Trust Bldg.	Phoenix 4-3337
Tucson	Stone & Congress Streets	Tucson 2360
CALIFORNIA, Bakersfield	1705 19th Street	Bakersfield 1688
El Centro	Professional Bldg.	El Centro 26
Fresno	1060 Fulton Street	Fresno 3-4252
Los Angeles	1151 So. Broadway	Prospect 1481
Oakland	3398 Broadway	Olympic 0333
Sacramento	1508 K Street	Capitol 1810
San Diego	625 Broadway	Franklin 7726
San Francisco	525 Market Street	Sutter 4985
San Jose	28 North First Street	Columbia 326
Stockton	408 E. Miner Avenue	Stockton 8790

IDAHO, Boise	First Nat'l Bank Bldg.	Boise 518
MONTANA, Billings	Fratt Bldg.	Billings 4121
Butte	Metals Bank Bldg.	Butte 6506
NEVADA, Reno	13 West Second St.	Reno 6191
OREGON, Portland	921 S. W. Washington Street	Broadway 2591
UTAH, Salt Lake City	Continental Bank Bldg.	Wasatch 6070
WASHINGTON, Seattle	418 Pike Street	Elliott 2676
Spokane	West 926 Sprague Avenue	Main 4108
Yakima	Corner 3rd and A Streets	Yakima 4144

C. I. T. CORPORATION

NEW YORK • CHICAGO • SAN FRANCISCO

A unit of Commercial Investment Trust Corporation — Capital and surplus over $100,000,000

SUCCESSFUL SALES IDEAS

Cahn-Forster's New 'Appliance Theater' Adds 20 a Day to Prospect List

DENVER—Opening of Cahn-Forster Electric Co.'s new "appliance theater" here has proved effective in obtaining an average of 20 new prospects each day, according to H. E. Dorval, manager. Located six blocks from the dealership's main store, it functions solely as a display unit,with all deliveries and service operations emanating from the central outlet.

Displays are arranged about the "theater" on each side of a circular aisle which terminates at two separate entrances at the front. Against the rear wall is a "stage," extending from ceiling to floor and occupying all but about 10 feet on each side.

Curtains folded back on either side of this stage resemble those in an actual theater. Table units in this space, as well as triple-tiered shelves extending upward in front of the curtains, are used as bases for seasonal merchandise. Small appliances are rotated with holidays, and are given special promotion in conjunction with advertising campaigns.

MINDS MADE UP

"Appliance salesmen," says Mr. Dorval, "along with car salesmen, are notorious with the buying public for their high-pressure methods. For that reason, the majority of people who come into an appliance store have already made up their minds.

"But others, who do not know whether they want to buy or not, who want to examine and 'feel' (most of whom are women), want to do their inspecting through a store window where they are safe from what they regard as coercion. Deemed inadequate in the past, this method has given way in the new store to one that we have already found leads to prospects we would not otherwise have discovered."

The new Cahn-Forster display center was designed to allow prospects to inspect a particular appliance at close range, have it demonstrated, and compare various lines of refrigerators, ranges, washers, and other merchandise with complete freedom from sales agrressiveness.

INSPECTION INVITED

Leisure inspection is invited, both from the design of the "theater" and through salesmen's suggestions. Grouping of large appliances close to the outer edge of the room and in the center of the loop permits the prospect to view them all by simply walking in one door, around the circular display, and back to the exit door.

"If a customer is in the market for any of the merchandise on display," says Mr. Dorval, "his questions, or the extent of his inspection, will indicate it. Only when such definite interest is shown do we make any effort toward a sale.

"And then, with the understanding that no salesman will call unless desired, the customer is free to come back to the store as often as he may wish, without feeling constrained to close the deal. If, on the other hand, a customer, after viewing the merchandise as it is shown here, is not interested, no amount of selling persuasiveness is going to make him buy."

An additional feature of the "appliance theater" is a striking color combination on the side walls, done in vari-toned blue beginning with a cobalt baseboard and shading upward in two-foot strips of gradually receding tints until it fades into a light cream at the ceiling. The customer is thus able to place any appliance against a background of at least six interior color schemes of the most popular color combination, blue and cream.

Sales School Held for St. Louis F-M Dealers

ST. LOUIS—Instruction in appliance merchandising was presented to salesmen of Fairbanks-Morse dealers in this territory at a recent sales school held by Fairbanks, Morse & Co., distributor in this territory.

Principles of salesmanship and sales features of the F-M Conservador refrigerator were discussed by Russ Lewis, dealer sales manager; construction and service details by George Noser, service manager; and advertising and sales promotion by Paul Cain, sales promotion manager.

The "graduating class" of the training school included: Ed Hughes, Macon, Mo.; Herb Semmelmeir, Belleville, Ill.; Chris Finke, Nashville, Ill.; Albert Auer, Highland, Ill.; Rich Deck, St. Louis; Harry Beckemeier, St. Louis; Charles Horeth, Mascoutah, Ill.; Jack Parsons, Bloomfield, Mo.; Milton Hente, Cape Girardeau, Mo.; William Lindner, Belle, Mo.; E. J. Frank, St. Louis.

Trailer Showroom Doubles Sales of York Dealer

YORK, Pa.—Since recent purchase of a trailer showroom, refrigerator sales of Automatic Refrigeration Co., Frigidaire dealer, have approximately doubled, according to company reports.

During the first three weeks in April, 98 units were sold by the firm's 10 outside salesmen.

To overcome the tendency of live prospects in rural districts to put off visiting the regular display room, the new trailer brings four refrigerator models right to the prospect's door. A long extension cord that can be plugged into any residential light socket makes it possible to give an actual working demonstration on the spot.

Trailer Helps Dealer Show Public What A Stoker Is

DETROIT—Glenn C. Morrison, representative in eastern Michigan for Combustioneer division, Steel Products Engineering Co., manufacturer of automatic coal burners, advertises his company's product by having a Combustioneer unit mounted on a specially built trailer attached to his car.

"Many people have heard of coal stokers," Mr. Morrison states, "but comparatively few have actually seen them. Consequently the trailer arouses a good deal of interest, and many good leads are secured from people who stop to look at it. The trailer has helped book so much extra business that I know it has already paid for itself many times over."

Mr. Morrison's trailer, which cost about $65 and has wheels which are interchangeable with those on his car, traveled about 10,000 miles last year.

2-Line Dealer Makes Salesmen Compete

ST. LOUIS—Competitive selling, between its salesmen, of different makes of refrigerators on the same floor has been started by Stix, Baer & Fuller Co., department store which handles both General Electric and Frigidaire lines.

Supervisors of the appliance division, however, are not allowed to sell in competition with their salesmen.

Company salesmen have been divided into two groups, one of which demonstrates and sells G-E refrigerators exclusively, the other doing the same with Frigidaire.

Advantages of the system, according to R. J. Winters, manager of the major appliance department, is that when the prospect asks which of the two makes he should buy, the salesman can answer the question "enthusiastically and frankly."

If a prospect, who has first been shown around the Frigidaire booth, asks to see the G-E line in the adjoining booth, he is handed over to a G-E salesman. Then, should the same prospect, after looking over the G-E refrigerators, want to take another glance at Frigidaires, he is turned back to the salesman with whom he first talked.

To prevent dissension between supervisors and their salesmen, supervisors do no selling. They are compensated by a salary, car allowance, and override basis.

Each appliance salesman is assigned so many calls per day and spends three days on the floor and three days in the street each week.

Putting a Stoker on Public View

Believing that many people have heard of coal stokers, but that few have seen one, Glenn B. Morrison, Combustioneer representative, had this trailer outfit built to show his product in and around Detroit. The trailer has paid for itself many times in increased business, Mr. Morrison reports.

Distributor Conducts 2-Week Sales School To Train Salesmen for Dealers

DETROIT—Morley Bros., Stewart-Warner distributor in this territory, has instituted a sales school to train salesmen for its various dealers, and in this way stimulate sales of Stewart-Warner products, according to Carl Crandell, appliance sales manager.

James J. Miller, former sales manager of Vallejo Electric Light & Power Co., Vallejo, Calif., is conducting the school in a combination classroom and showroom in the basement of Hotel Webster Hall.

Training period for the men consists of one week of class work and one week of supervised field work. During this period the men are given free lunches and transportation, and during the week of field work they receive 5% commission on all sales they make.

At the end of the training period, those who have qualified are turned over to the dealer, who agrees to pay them $100 a month, plus a bonus for sales in excess of individual quotas. These quotas approximate $1,200 or $1,500 worth of appliances per month, according to Mr. Miller.

If any of these salesmen find that they cannot close a sale without a demonstration, they bring the prospect down to the classroom-showroom, where all the appliances are on display.

Salesmen themselves are forbidden to sell anything but Stewart-Warner appliances, Mr. Crandell stated, although supervisors are sometimes granted this privilege if it is impossible to sell the prospect on the Stewart-Warner line.

First dealer for whom men are being trained is Nome Refrigerator & Appliance Co., and many of the men being selected are Wayne University students.

"We're going to wait and see how the plan works out with Nome," declared Mr. Crandell, "before laying any definite plans regarding cooperation with other dealers. Perhaps we are overly enthusiastic, but from the Nome training school alone we hope to realize 1,000 refrigerator sales in the next 120 days."

Dealer Holds Appliance Show To Stimulate May Sales

SULLIVAN, Mo.—To stimulate May sales, the Sullivan Motor Co. held a household appliance show featuring Grunow refrigerators and ranges, ABC washers, and Universal ranges here recently.

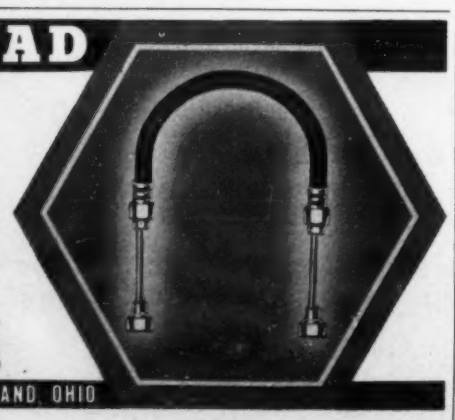
"Every dollar counts in the restaurant business—and our electric bills have been much smaller since we installed our Copeland unit."

Hotels, restaurants, soda fountains, dairies —thousands of them everywhere testify to the trouble-free economy and efficiency of Copeland commercial refrigeration units.

Write for our Sales Plan

COPELAND
REFRIGERATION CORPORATION . . . DETROIT, MICHIGAN

WEATHERHEAD
CHARGING HOSE



- Flexible conductors for all refrigerants.
- Complete range of sizes and lengths.
- Six inches of copper tube at each end.

GENUINE WEATHERHEAD REFRIGERATION PARTS
WEATHERHEAD • 300 E. 131 ST. • CLEVELAND, OHIO

METER-MATIC
RENTAL METERS
for
LAUNDRY
APPLIANCES

WILL SELL MORE WASHING MACHINES and IRONERS to the apartment building and tourist camp market. Thousands already in use. Write for full information.

International Register Co.
27 S. Throop St. Chicago

CONDENSERS . . . EVAPORATORS

The dependability of 33 years specialized experience is back of Long condensers and evaporators (domestic and commercial) for electric refrigeration and air conditioning applications. Complete experienced engineering cooperation available •

Long Mfg. Division Borg-Warner Corporation—Detroit, Michigan & Windsor, Canada

LONG

Birmingham Dealers Start Range Drive

BIRMINGHAM, Ala.—Sale of 2,700 electric ranges and water heaters during May and June is the aim of the campaign recently launched by the Electrical Dealers Association of Alabama and the Alabama Power Co.

Inaugural of the campaign followed a survey made by the utility company, in which 6,110 women expressed their desire for ranges and 4,000 for electric water heaters.

Dealers receive a bonus for each sale. Display materials, cooking schools, and easy financing plans are part of the campaign.

President of the dealers' association is John Shaw, manager of the electrical department of Moore-Hadley Hardware, Birmingham .

Zimmerman Appoints New Home Bureau Personnel

NEW YORK CITY—Appointment of C. W. Stuart as assistant general manager of the General Electric home bureau here was announced recently by P. B. Zimmerman, general manager of the company's appliance sales. Mr. Stuart at the same time will continue his duties as secretary of the G-E appliance sales committee.

Two new field representatives also have been added to the home bureau staff. Hugh J. Lunny, formerly with Caswell, Inc., and with G-E Supply Corp., Detroit, will carry on field contacts for the home bureau in that city.

Randolph L. Ruhley, architect, who for the past five years has been associated with the Cleveland Vibrator Co., will represent the home bureau in Cleveland.

Crosley to Exhibit at Cleveland Show

CLEVELAND — Crosley Radio Corp. will exhibit refrigerators, radios, and the new Xervac scalp conditioners at this year's Great Lakes Exposition, which opens May 29.

Featured in the Crosley exhibit, in the Hall of Progress, will be the new "musical" refrigerator, with built-in radio, and the "WLW console," largest home model radio receiver, with 50-watt output, 37 tubes, and six speakers, retailing for $1,500.

A scalp specialist will give Xervac treatments to exposition visitors, says Edward J. Ruth, sales manager of the Frankelite Co., Crosley Cleveland distributor.

Peoria Dealers Participate In National Home Show

PEORIA, Ill.—Eight mechanical refrigerator dealers and air-conditioning companies maintained exhibits at the Peoria National Home Show, May 11 to 16.

Refrigeration dealers were P. A. Bergner & Co. (Norge); Black & Kuhl Co. (Frigidaire); Chambers Range Store (Stewart-Warner); Clarke & Co. (Westinghouse); Cohen Furniture Co. (Leonard); Gas Appliance Sales Co. (Electrolux); Marquette Equipment Co. (Kelvinator); and Sears, Roebuck & Co. (Coldspot).

Air-conditioning dealers were Air Control, Inc. (Golden Rod), and Home Owners Improvement Co. (Carrier).

Air-conditioning dealers were Air Control, Inc. (Golden Rod), and Home Owners Improvement Co. (Carrier).

Grunow Distributor Moves, Names New Manager

NEWARK—The Nassau Distributing Co., Inc., Grunow distributor here, has moved its offices from 275 Halsey St. to new quarters at 972 Broad St.

David E. MacCabe was recently appointed manager of the distributing firm, and James Howard now heads its promotional activities.

Ice Refrigerator Sales Increased In March

CHICAGO—Sales of ice refrigerators during March were 47.1% higher than those during the same month a year ago, according to a report released recently by the National Ice Refrigerator Manufacturers Association.

Mullins May Purchase Youngstown Concern

SALEM, Ohio.—The Mullins Mfg. Co. here is negotiating to purchase the Youngstown Pressed Steel Co., Warren, Ohio manufacturer of kitchen cabinets, washing machine tubs, and other pressed steel products and stampings.

The move has been approved by the directors of the Mullins Co., and now awaits the ratification of stockholders.

Indianapolis Gibson Distributor Moves

INDIANAPOLIS — Federal Home Equipment Co., Gibson refrigerator distributor for 61 central Indiana counties, has moved to new and larger quarters at 124 N. Pennsylvania St., where it occupies two floors and the basement.

Paul D. Cave is president and treasurer of the company. Staff members are Charles H. Tomlin, M. M. Johnson, Earl Sheets, W. H. Grafe, and Jack Cain.

Raborn to Direct Sales at G-E Atlanta Office

MEMPHIS, Tenn.—B. M. Raborn, formerly manager of General Electric Supply Corp. branch here, has been appointed specialty sales manager of the General Electric Co.'s Atlanta office. G. T. Warren succeeds him as manager of the Memphis branch.

Miss Ashley Rodeniser Opens Own Store

NEWARK, Ohio—Ashley Electric Store, owned and operated by Miss Ashley Rodeniser, has opened here as dealer for the full line of Norge appliances.

Miss Rodeniser has had several years of experience in the electric appliance business, both as merchandiser and salesman.

Westinghouse to Exhibit At Frisco Exposition

SAN FRANCISCO—First purchase of industrial exhibit space at the Golden Gate International Exposition, to be held in 1939, has been completed by Westinghouse Electric & Mfg. Co. through W. R. Marshall, local vice president of the company.

Westinghouse contracted for approximately 5,000 sq. ft. of floor space in the exposition's Palace of Electricity, at a cost of $32,000. Plan of the exhibit has not been disclosed.

Fred E. Dunn Joins Crosley Outlet in New York

NEW YORK CITY—Fred E. Dunn, former head of the major appliance sales promotion department of Spear & Co., retail furniture and appliance chain, has joined the staff of Crosley Distributing Corp. He will cover the Brooklyn territory.

Previous to his association with the Spear organization, Mr. Dunn was in charge of the outside sales crew of Bloomingdale department store, here.

PEI Sponsors Displays At House Exposition

CHICAGO—Porcelain Enamel Institute sponsored two displays at the National House & Garden exposition here May 8 to 16.

First display was of the company's "all-porcelain enamel" kitchen, showing the refrigerator, range, cabinet space, and table. Second was the institute's regular educational exhibit, where porcelain enamel ash trays were fired.

Background of the second exhibit portrayed steps through which a porcelain enameled products goes.

Cheyenne Dealer Takes Part in Cooking School

CHEYENNE, Wyo.—C. H. Simpson, Frigidaire dealer, cooperated with the *Cheyenne State Leader* in conducting its annual cooking school recently.

Dorothy Gill, home economist, demonstrated the new Frigidaire.

Daily Sales of $3,000 Realized at Miami Show

MIAMI, Fla.—Gross daily sales of from $3,000 to $3,500 were reported by exhibitors during the first five days of Modern Homes and Electrical Exposition which closed recently at the Ford Exposition Building. Many of the show's 50 display booths were occupied by local appliance dealers.

In addition to actual sales, exhibitors reported acquisition of hundreds of leads.

Electrolux Dealer Offers Gas Supply to Purchaser

BATON ROUGE, La.—New high in "free deals" as an inducement to refrigerator sales is reached in the offer of the Home Appliance Co., Electrolux dealer, to pay the gas bill for two years on all gas refrigerators purchased from it during a limited period.

Baton Rouge is in the natural gas region; fuel is comparatively cheap.

GOODYEAR

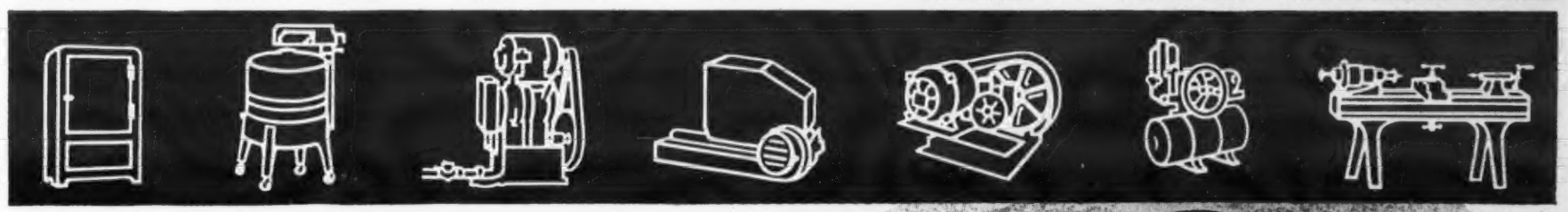
ENDLESS CORD V BELTS

JOBBERS: We are authorized distributors for Goodyear Replacement V Belts for Refrigerators and Washing Machines.

Immediate shipments from our large Detroit stock. Write us.

DETROIT RUBBER PRODUCTS, INC., 35 Parsons St., Detroit, Mich.

REFRIGERATORS WASHING MACHINES WATER PUMPS STOKERS OIL BURNERS BEER PUMPS WOOD WORKING MACHINES



SPEED UP YOUR V BELT SALES!

GET THIS SALES-MAKER
Handsome three color all-metal display rack furnished with any standard Goodyear assortment

YOU can sell more Goodyear Fractional Horsepower Replacement V Belts because they are made in a complete range of sizes for every make and model of air conditioning unit, refrigerator, washing machine, oil burner, stoker, beer pump, water pump and light machinery drive . . . Because their Goodyear-originated *endless* cord construction is virtually *stretchless*, eliminating slip! . . . Because tests prove they last longer, run quietly and deliver maximum efficiency . . . And because they bear the greatest name in rubber — the name that stands for highest quality and value in belting! . . . With Goodyear V Belts you can *satisfy* every customer. For prices and handy Application Guide, write your jobber —or Goodyear, Akron, Ohio, or Los Angeles, California.

★ ★ ★

NOW—A PROFITABLE WAY TO SELL WASHING MACHINE WRINGER ROLLS

Goodyear Universal Washing Machine Wringer Rolls eliminate carrying a large stock of made-up rolls, increase turnover and profit. Made in six standard diameters with extra rubber and shaft length that can be quickly cut to fit any wringer with Goodyear Combination Milling Machine. Write for data.

THE GREATEST NAME IN RUBBER
GOODYEAR
FRACTIONAL HORSEPOWER ENDLESS CORD V BELTS

COMMERCIAL NEWS

Effective 'Using the User' Tactics Find Scheper's Milk-Cooler Customers Doing His Job for Him

By Alfred Jones

UTICA, Mich.—Leading milk cooler salesman in this part of the state is said to be Henry Scheper, owner of Scheper's Electric Shop and Kelvinator dealer in this territory.

Mr. Scheper sold his first cooler in 1928, spent the next few years building the foundations of his business, increased sales volume every year, and now has a set-up which practically runs itself. During the first four and a half months of 1937 he has sold 22 farm milk coolers, and is now maintaining a sales average of three units per week.

Milk coolers are but part of Mr. Scheper's business, for he is equally successful with Kelvinator home appliances, including refrigerators, ranges, and washers. His cooler installations consist of Esco cabinets hooked up to Kelvinator commercial condensing units.

When asked how he sells the milk coolers, Mr. Scheper said that he "just goes out and sells them." Having been in the refrigeration business here since he came from Germany 14 years ago, Mr. Scheper knows and is known by the farmers in this area. This fact is his best asset in producing sales.

"I sell in my own way," he explained. "I just talk the farmers' language, prove to them they can save money with the milk coolers, and show them how they can also save their own time and effort."

He uses testimonials from satisfied customers, which really means all customers, shows photographs of installations, and relies on impromptu recommendations to be given by users when they get together for farmers' "shop talk."

"I find that one sale usually leads to another," said he.

As an extreme illustration, Mr. Scheper told of a farmer who was so impressed with the profitable results of his milk cooler that he wanted to sell some to his friends. He himself wished to buy a household refrigerator from Mr. Scheper; so an agreement was made whereby Mr. Scheper would accept the commission earned by the farmer as part payment on the refrigerator.

"Within a week," Mr. Scheper related, "he had sold four coolers and earned about $180 in commission. He got his refrigerator fully paid for and had some money left over."

Mr. Scheper normally does all the actual selling himself.

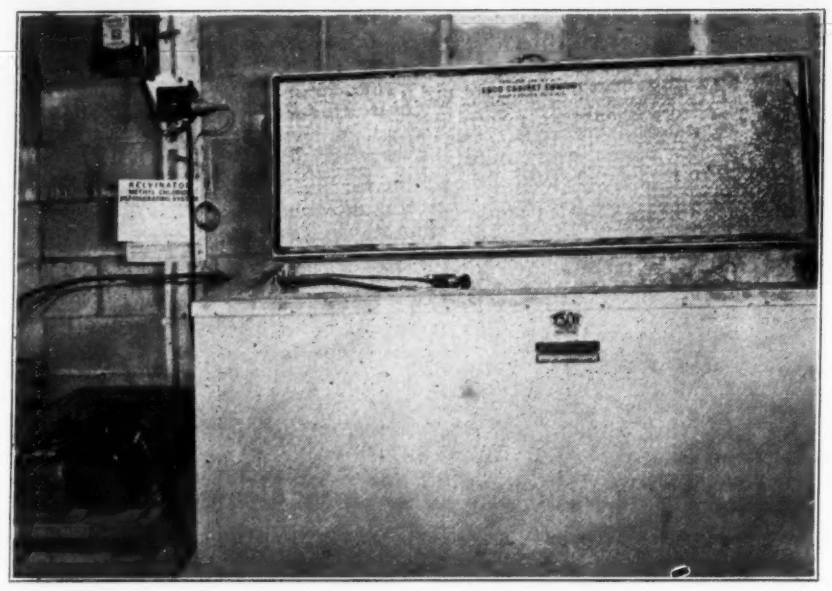
"We have four men who go out and find prospects and get them interested in our products," he said, "but I make it a point to sell the coolers myself."

One reason the farmers are buying milk coolers, Mr. Scheper said, is that Detroit officials are strict in examining milk. Most milk produced in this section of Michigan is marketed in Detroit, and there is a "Blue Test" which must be passed by all milk before it is accepted.

Main requirement of the test is that the milk must be cooled to a specified temperature as it leaves the farm or the farmer's truck. Failure to pass the test means that the farmer must take back his whole shipment, on top of which he is not permitted to send any more milk in for a week. To the farmer this means a loss of from $60 to $80 or more.

A second rejection by inspectors stops the farmer's sale of milk for two weeks, and a third for a month. Mr. Scheper proves to the farmers that the milk coolers assure the maintenance of the required temperature. With this equipment they are able to cool the milk to 50° in about 20 minutes, and to even lower temperatures in an hour.

Typical Scheper Milk-Cooler Installation



Four-can Esco milk-cooling cabinet hooked up to Kelvinator condensing unit on farm of John Engel, Macomb County, Michigan. This installation is one of many to be seen in this region, where Henry Scheper has done such a good selling job that his sales now average three a week.

In this way the farmers are made to realize that the coolers can pay for themselves very quickly. Consequently, they buy.

Mr. Scheper covers a wide area in selling the coolers, his territory including at least five counties.

A vivid example of how Mr. Scheper's business runs itself was enacted while the writer observed. A storekeeper, who evidently was a good friend of Mr. Scheper, came in to make a payment. Mr. Scheper casually suggested that this money be applied toward a down payment on a household refrigerator.

There had obviously already been some talk between the two men about the refrigerator, for the storekeeper promptly fell into conversation. Mr. Scheper informally demonstrated the unit, pointing out its various features, explaining its operation, and mentioning the five-year guarantee.

The storekeeper then pitched in and extolled the refrigerator, telling Mr. Scheper of its advantages, its economy, its efficiency, and citing experiences of friends who had similar appliances. Mr. Scheper could do no more than politely agree to all of the storekeeper's statements.

"Make that payment I just made the first instalment on this box and I'll take it," ejaculated the customer.

"All right," said Mr. Scheper. "It's a deal."

"It's a deal," came the echo.

When the storekeeper had gone, Mr. Scheper turned to the writer and smilingly commented, "There! You see how it is? They sell themselves."

New Distributing Firm Operates in Memphis

MEMPHIS, Tenn.—Mid-South Refrigeration & Appliances, Inc., has taken over the electrical appliance division of the Automobile Sales Co. here.

Lines carried by the new distributing firm, which will maintain a retail sales outlet, are: Westinghouse commercial equipment, Sparton refrigerators and radios, Tyler display cases, Thor washing machines and ironers, Russ counter freezers, Victor milk coolers, and Eagle beverage coolers.

L. W. M. Hudson, formerly manager of the electrical appliance division of Automobile Sales Co., is president of the firm. Other officers are: L. B. McCall, vice president; Harold Koerner, secretary-treasurer; and W. N. Fry, city sales manager.

Sears & Piou Add Carrier Commercial Line

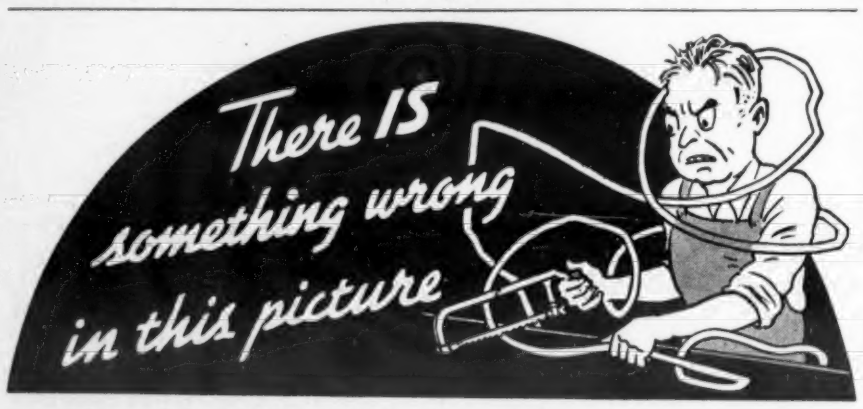
ST. LOUIS—Sears & Piou, Carrier air-conditioning dealer, recently has taken on the Carrier line of commercial refrigeration equipment, reports Mark. E. Mooney of Carrier's commercial refrigeration dealers development department.

The company plans to set up a separate commercial department on May 15 under the management of H. W. Schrick, formerly with James & Co., General Electric distributor.

New Rempe Catalog Lists Unit Coolers & Blowers

CHICAGO—Rempe Co., manufacturer of coils and unit coolers, has issued a catalog describing its unit coolers and blower units for low temperatures, walk-in coolers, and comfort cooling applications.

Ratings and requirements for the various applications are shown.



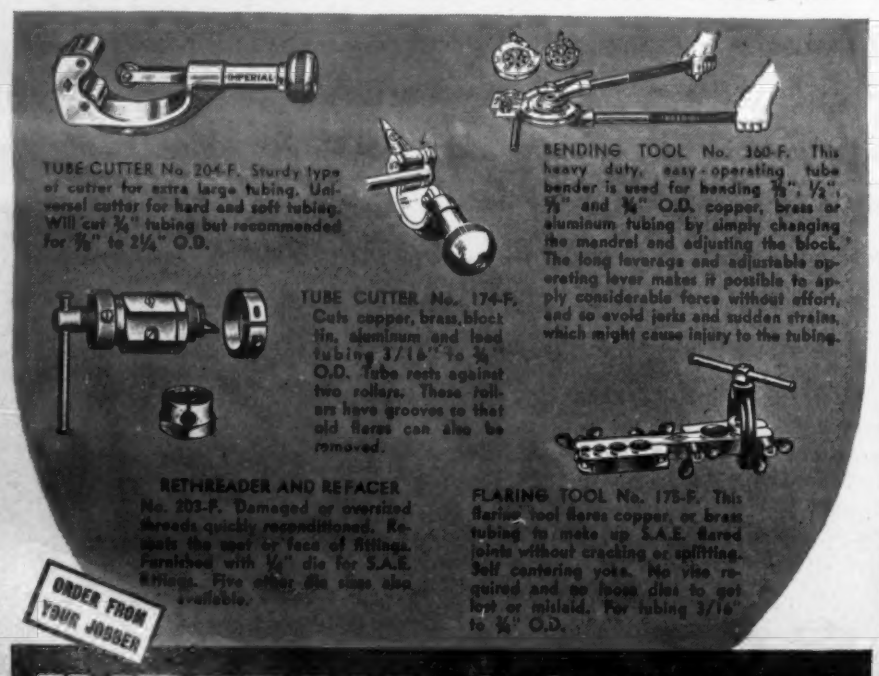
--and Imperial tools for refrigeration work would quickly correct it

MAYBE this picture is just a trifle exaggerated but there is no doubt about the fact that tubing work can be mighty exasperating.

Installation and service men are taking a three way crack at the tubing problem. First they are using Imperial copper tubing. Then they are using the various Imperial connecting fittings and, third, they are using Imperial tools.

Write for detailed information or ask your jobber about Imperial's complete line of inexpensive service tools that take all the grief out of tubing work.

IMPERIAL BRASS MFG. CO., 565 S. Racine Avenue, Chicago, Ill.

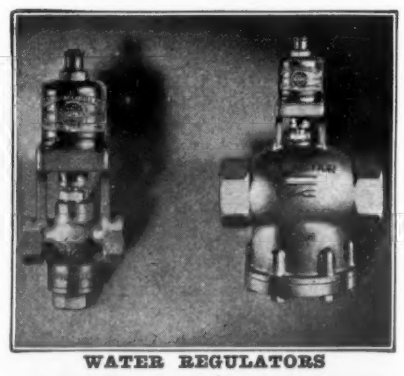

TUBE CUTTER No. 204-F. Sturdy type of cutter for extra large tubing. Universal cutter for hard and soft tubing. Will cut ¾" tubing but recommended for ⅝" to 2¼" O.D.
BENDING TOOL No. 360-F. This heavy duty, easy-operating tube bender is used for bending ⅜", ½", ⅝" and ¾" O.D. copper, brass or aluminum tubing by simply changing the mandrel and adjusting the block. The long leverage and adjustable operating lever makes it possible to apply considerable force without effort, and so avoid jerks and sudden strains, which might cause injury to the tubing.
TUBE CUTTER No. 174-F. Cuts copper, brass, block tin, aluminum and lead tubing 3/16" to ⅞" O.D. Tube rests against two rollers. These rollers have grooves to that old flares can also be removed.
RETHREADER AND REFACER No. 203-F. Damaged or oversized threads quickly reconditioned. Repairs the seat or face of fittings. Furnished with ¼" die for S.A.E. fittings. Five other die sizes also available.
FLARING TOOL No. 175-F. This flaring tool flares copper, or brass tubing to make up S.A.E. flared joints without cracking or splitting. Self centering yoke. No vise required and no loose dies to get lost or mislaid. For tubing 3/16" to ¾" O.D.
ORDER FROM YOUR JOBBER

IMPERIAL Air Conditioning and Refrigeration Products

PERFECTION
REFRIGERATION PARTS
Pass Exacting Tests

COMPRESSOR PARTS

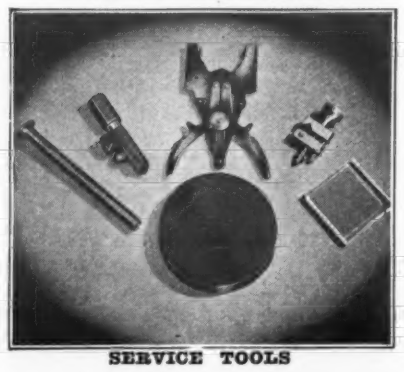
to insure
Accurate Fit
Dependable Performance
and
Long Life in Service



WATER REGULATORS

VALVES

FITTINGS



SERVICE TOOLS

Service Engineers save a lot of time and effort when they use Perfection Certified Parts. These quality products are accurately made and rigidly inspected and, therefore, are not only easy to install, but fit perfectly and contribute to long, quiet, dependable operation of refrigerating system.

Every item in this complete line is *certified to excel*—and so well has Perfection achieved the ideal of excellence that throughout the country progressive men engaged in rendering refrigeration service associate satisfied customers and a growing business with the name, Perfection.

Today, the symbol of Perfection is universally recognized in the refrigeration field, as well as in the automotive industry, as assurance of skilled engineering, the use of the best suited materials, precision workmanship and efficient service.

This universally popular line includes VALVES, WATER REGULATORS, FITTINGS, TOOLS and COMPRESSOR PARTS. The compressor parts are not limited to a single make, but are available for Copeland, Frigidaire, Kelvinator, Servel, Universal Cooler, Zerozone and others.

Leading jobbers everywhere handle Perfection products—and it pays to look for the Perfection emblem when purchasing refrigeration parts.

PERFECTION REFRIGERATION PARTS CO.
(A division of Perfection Gear Company . . . Established 1919) HARVEY, ILLINOIS

Houston Beverage Cooler Sales Set Record in April

HOUSTON, Tex.—Electric beverage cooler dealers sold 82 units to Houston business houses during April, more than doubling the number sold during any single month last year.

Reasons to which the sales increase is attributed by Houston Light & Power Co. are:

1. Introduction of larger self-contained coolers, capable of cooling 40 to 60 cases of beer per day, by several companies, including Westinghouse, Frigidaire, Kelvinator, Pelco, Norge, and General Electric.

2. Introduction of the combination wet and dry storage units, to serve the dual purpose of food storage and beverage cooler.

3. Realization by dealers that the beverage cooler field is a large potential user.

Best beverage selling job of the month was turned in by Salesman Lake of Brunswick-Balke Co., who sold 14 "Blue Flash" beverage coolers in as many days.

Other commercial refrigeration equipment sold during the month included 12 display refrigerators, six storage refrigerators, one water cooling system, 18 water cooling units, nine pieces of dairy equipment, and 21 miscellaneous jobs.

Armstrong Cork Gets Large Brewery Job

LOWELL, Mass.—Materials produced by Armstrong Cork Products Co., Lancaster, Pa., were used extensively in the remodeling of the Harvard Brewery here.

Walls of the fermenting rooms are insulated with 3 inches of Armstrong's standard corkboard, and finished with portland cement plaster facing. Bottoms of the fermenting tanks are insulated with 4 inches of Armstrong's LK corkboard, laid in waterproof cement. The bottoms were then coated with asphalt.

Accurate temperature control and low refrigerating cost for the hop storage room are facilitated by two layers of 2-inch corkboard insulation. Walls were leveled up with portland cement plaster, and the first layer of corkboard was installed in this plaster. The second layer was applied in asphalt emulsion and finished with portland cement plaster.

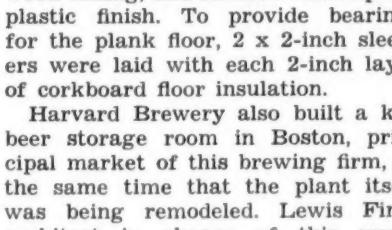
Corkboard was applied to a false wood ceiling, and finished with asphalt plastic finish. To provide bearings for the plank floor, 2 x 2-inch sleepers were laid with each 2-inch layer of corkboard floor insulation.

Harvard Brewery also built a keg beer storage room in Boston, principal market of this brewing firm, at the same time that the plant itself was being remodeled. Lewis Fink, architect in charge of this work, chose Armstrong's corkboard to insulate walls and ceilings. Four inches of insulation was applied in 2-inch layers, and plastic finish was applied on the ceiling.

Milwaukee Dairy Buys 3 Refrigerated Trucks

MILWAUKEE—Three ice cream trucks, each with a capacity of 550 gallons and refrigerated by Kold-Hold units, were recently purchased by the Meter Ice Cream Co. here, and are being used for local delivery covering routes 50 to 60 miles long.

The Kold-Hold units, which maintain a temperature of 5° below zero, are recharged from the plant's ammonia system at night. Insulation in the truck bodies, which were built by the H. Barkow Co. of this city, consists of Dry-Zero Sealpad, 8 inches thick on the roofs, and 6 inches on the sides and ends. The floor covering is 6 inches of cork.



TRAINING MEN IS OUR JOB

And U.E.I. Free Placement Bureau supplies **trained** shop mechanics, installation and service men to this industry. When you need a good workman, use this Free Service. No fees of any kind.

UTILITIES ENGINEERING INSTITUTE

404 N. Wells St. Chicago, Illinois — Established 1927 — 17 West 60th St. New York, N.Y.

Memphis Housewives Greet Newest Style Serve-Self Market

MEMPHIS, Tenn. — First of the contemplated chain of "Keedoozle" stores—latest bid by Clarence Saunders (of Piggly Wiggly fame) to make a comeback in the retail grocery field—was opened May 15 here and throngs of Memphis housewives were on hand to investigate the newest style of "serve yourself" food store.

The now gray-thatched Saunders personally supervised the opening of the store, which is described as suggesting a "museum lobby with glassed-in displays around the walls."

Perishable foods are kept in glass-enclosed coolers. Refrigeration for the coolers is furnished by two Lipman model 153 and one Lipman 103 condensing units.

Customers "order" the various items by inserting a key into a slot under the item displayed.

Then, in the meat department for example, the customer orders meat from sample cuts which are behind the glass. He puts the key in the slot for the particular sample cut of meat desired. A light in the globe end of the key flashes an order of that cut.

When the customer returns to the cashier, he puts the key in the master slot and the chutes in which the merchandise has been placed dump the order on a belt which brings the item to the front counter.

Memphis customers who were interviewed declared they liked the store because it was "easy to shop in, clean, and low-priced."

Great Lakes Exposition To Feature Ice Rink Theater This Year

CLEVELAND — Ammonia refrigeration equipment for "Winterland," the 4,000-sq. ft. artificial ice-rink theater for the 1937 Great Lakes Exposition, has been designed by Carbondale New York Co. and is being installed by Avery Engineering Co. of this city. The exposition opens May 29 to run 101 days.

Ten thousand feet of 1¼-inch brine pipe are being laid on a cinder fill. This will be covered with sand to make the freezing floor, and water will be sprayed on top until the ice is the required thickness for skating.

Quick freezing ability is necessary because, in addition to three to five regular daily shows, the rink will be opened to summer ice skaters in the mornings and late at night.

Insulation from the summer sun's heat is to be provided by a double top of two large canvases, separated by 1 foot of air space, and covering both the rink and a 2,500-capacity grandstand.

Included in the refrigeration equipment are a Worthington-Carbondale 55-ton ammonia compressor with a 55-ton shell and tube brine cooler, brine storage tank, and a 55-ton ammonia condenser.

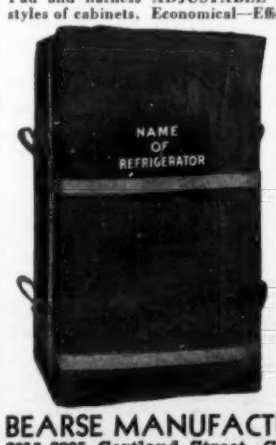
The compressor is driven by a 75-hp. squirrel-cage motor with multi-V drive. The brine pump is a centrifugal type, with 300 g.p.m. capacity.

Lighting system of the ice-rink theater has been designed by Century Lighting, Inc., of New York. A switchboard of 240,000 watts capacity, more than 300 lighting units for colorfully cross-lighting the interior, and Westinghouse mercury-vapor lamps for the exterior are to be provided.

THE MASTERCRAFT

ADJUSTABLE PAD AND CARRYING HARNESS FOR SAFE DELIVERY OF AUTOMATIC REFRIGERATORS

Pad and harness ADJUSTABLE to many sizes and styles of cabinets. Economical—Efficient. Sturdily constructed, easily applied. Name of refrigerator attractively lettered on pad without charge.



Pad (Adjustable) $9.50 ea.

Harness (Adjustable) $6.00 ea.

The Pad and Harness are separate.

Individual carrying straps $1.75 each and up. Write for 1937 Folder & Prices on entire Pad Line.

BEARSE MANUFACTURING CO.

3815-3825 Cortland Street, Chicago, Illinois

Refrigeration Protects Expedition's Emulsion

WASHINGTON, D. C.—Mechanical refrigerators are to be used to keep photographic emulsions cool for the 13 scientists of a South Seas expedition sponsored by the National Geographic Society and the U.S. Navy.

Officials explained that since the emulsions consist largely of gelatin, the photographic plates on which they are to be used would deteriorate rapidly without the protection afforded by the refrigerators.

The expedition is being transported by the navy seaplane tender **Avocet** to a pair of lonely Pacific islands. Its purpose is to make astronomical photographs to be used in subsequent study.

Lipman Equipment Used In Binghamton Market

BINGHAMTON, N. Y.—Installation of three Lipman commercial refrigerating units of ¾, 1, and 1½-hp. capacities in the Ideal Food Market opened here recently was made by the Elmira Store Fixture Co., dealer for General Refrigeration Sales Co., Lipman manufacturer.

Cleveland Florist Installs McCray Refrigeration

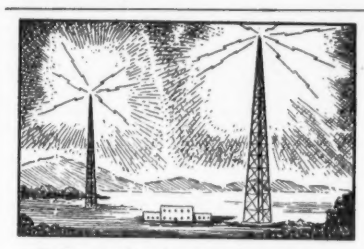
CLEVELAND—Sale of special RB-892 McCray refrigerator, 8. ft. 7½ inches high, 8 ft. 6 inches wide, and 34 inches deep, has been made to Thoss, Florist by A. P. Carnahan of the Cleveland branch of McCray Refrigerator Co.

Kason Markets New Drop-Shelf Bracket

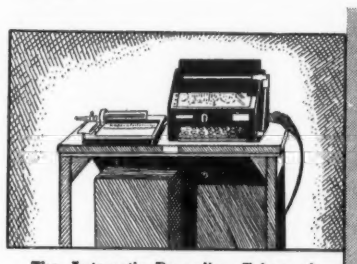
BROOKLYN — Kason Hardware Corp. has just brought out a new drop-shelf bracket for use on shelvings, cutting, and wrapping boards in the cramped quarters in modern stores.

When the shelf is not needed, it can be "dropped" out of the way. Special construction projects the shelf flush against the wall or case when set-up, or if this is inconvenient, the shelf can be tipped up instead of down.

One use of the bracket is to provide cutting or wrapping boards for display cases. Known as the model K-99H, the bracket is made of malleable iron, tinned finish, and said to be able to support 100 lbs.



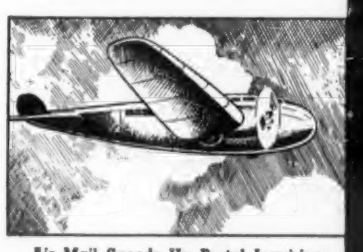
Radio speeds orders to us from distant points



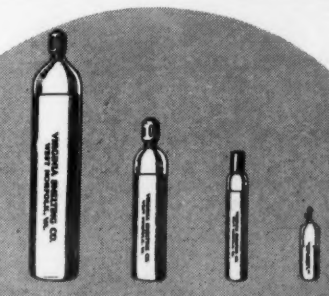
The Automatic Recording Telegraph brings your wired orders direct to our plant

The Telephone Helps Get Your Order Through Quickly

You can reach us at West Norfolk, New York or Boston by Teletype

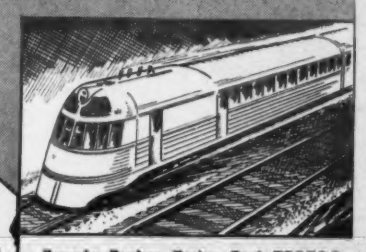


Air Mail Speeds Up Postal Inquiries and Orders



EVERY MEANS KNOWN TO MODERN SCIENCE

Brings you these Refrigerants Where and When you Want Them



Speedy Zephyr Trains Rush ESOTOO and V-METH-L to You

Swift Ships are Important Cogs in our Delivery System

Fast Freight is Utilized to give you Maximum Service

Trucks Make Short Hauls to Rush These Products to You

82 DISTRIBUTING POINTS THROUGHOUT THE WORLD

You are assured of getting the famous refrigerants, ESOTOO (liquid sulphur dioxide) and V-METH-L (Virginia methyl chloride), with unsurpassed rapidity of delivery. Throughout the world, these clean, pure, and *absolutely dry* refrigerants are rushed to our customers by every means known to modern science from 82 distributing points strategically located. This efficient delivery system and the uniform high quality of these products are major factors in the rapidly increasing demand for these fine refrigerants.

EXTRA DRY ESOTOO *and* V-METH-L

PRODUCTS OF VIRGINIA SMELTING CO.

WEST NORFOLK, VA.

THE AIR AGE

BY F. O. JORDAN

Is Heating Really Heating?

Is the purpose of heating equipment really for the purpose of heating us, or is its function actually to keep us cool?

We might answer this question by asking if you remember the fundamental thermodynamic laws of heat-flow. Just in case you have forgotten, according to thermodynamics, when heat flows the B.t.u. always flow down the slope of the thermal hill. In other words, heat always is transmitted from bodies or areas of higher temperature to ones of lower temperature.

Therefore, if the purpose of our heating system were to heat our bodies, it would be necessary for it to maintain the air temperature of our rooms at a higher level than our body temperature. In order to do a good job of actually adding heat to a perspiring human being, it would be necessary to maintain an air temperature considerably above his body temperature in order to counteract the cooling effect of the evaporation of perspiration from his skin.

Such efficient heating would be quite effective indeed, for the inability of the body to throw off its metabolic heat against the higher environmental temperatures soon would result in nothing less than death. In order to prolong life it is absolutely necessary for the body to be permitted at all times to dissipate the heat resulting from metabolic processes. Otherwise the internal temperatures would build up until its very life would be burned out.

In order for the body to function at its best, and for comfort to be ideal, the rate of heat dissipation must be regulated within a given normal range. If the rate is restricted below this range, a sense of uncomfortable warmth is felt which is detrimental to life. If the rate of heat loss from the body is allowed to exceed this optimum range, the human being shivers with the discomfort of cold, and life and its functions again suffer.

The rate of heat removal is reduced by environmental temperatures which are so high that they restrict loss of sensible heat, and by atmospheric humidity so high that absorption of heat from the body resulting from the latent heat of evaporation of its perspiration is prevented. For the honest sweat of hot humidity cannot evaporate if the surrounding air already is so full of moisture that it can hold no more.

These are the reasons why cooling and dehumidifying of summer air is so essential for preventing the once unavoidable seasonal droop in the human efficiency curve, and in many instances even for preventing untimely end of Life itself—during those endless torrid days and sultry nights of the good old summer time.

Conversely, the rate of heat removal from the body becomes excessive if environmental temperature falls so low that heat flows from the body down the too steep "thermal hill" more rapidly than produced by body metabolism and if the environmental humidity is so low that the rate of moisture evaporation from the skin becomes excessive. Under such conditions a person feels "cold"; discomfort and reduced efficiency results, health suffers, and rheumatic pains make life a burden.

These are the reasons why natural air temperature and humidity during the wintertime must be augmented, not for the purpose of heating humanity, but to insure the life health and comfort of this form of life by cooling it at a lower rate than would result were Old Man Winter permitted to have his way.

What is Freon?

Heretofore, when asked the question, "what is Freon" the standard reply always has been, dichlorodifluoromethane." Whereupon the inquirer knows just as much as he did before, and probably just as much as the informer knows too. But nobody ever feels badly over that, for just to be able to say a name like that everybody admits is something.

In rare cases when some questioner of unusual persistence asks for more, the answer may be "CCl_2F_2," but anybody can find out that much merely by taking a look in the Refrigerating Data Book. But apparently even the latest 1937-38 issue knows no more, for that is as far as it goes.

Then at last we ourself asked the question, for at a convention in Hot Springs, Va., we came face to face with none other than W. W. Rhodes of Kinetic Chemicals, Inc.

Frankly, one would not expect "Dusty" to have much of an answer, for after all he is only a sales manager. But life is full of surprises, for the next instant Mr. Rhodes had a pencil (our pencil) and paper, and had C's, Cl's, and F's popping all over the paper as atoms formed and reformed themselves into molecules of Freon, or F-12 and Trichloromonofluoromethane or F-11, depending upon how you handle your catalytic agent and other things.

The explanation was that F-11 and F-12 really are the same thing, only you juggle your atoms about in different proportions. If it is F-12 that you want, you take each molecule and put in an extra atom of fluorine, taking out an atom of chlorine so that you have two atoms of each and one atom of carbon.

Then if you decide in favor of F-11, you can change it back by throwing in an atom of chlorine and dragging out one of the fluorine atoms so that you have one carbon, one fluorine, and three chlorine atoms per molecule. Then you sell it to Carrier as a low pressure refrigerant to use in those big turbo compressors.

It all depends upon how you handle your catalytic agent and the way you set the atom director.

Never again will we say that a sales manager is dumb.

However, the answer so far was not what we were after, for what we wanted to know was what Freon is made out of in English, not as told in the language of chemistry.

The answer is simple, for the Freons are made by combining fluorospar and carbon tetrachloride. The "carbon tet" comes from the Midland, Michigan plant of Dow Chemicals, while the fluorospar is mined in many places in U.S.A., and even abroad.

We are informed that Kinetic Chemicals has a standing offer to buy from anyone who has some fluorospar to sell, for it is deemed safer to have many available sources of supply just in case. So there is your chance to get into the fluorospar business—all you need is some fluorospar.

In the Wilmington, Delaware plant of Kinetic Chemicals, the fluorospar as mined is made into hydrofluoric acid (HF), which in turn is made to combine with the carbon tet in the presence of a catalytic agent so that Freon-11 or Freon-12 result as desired.

Admittedly this is not much of an explanation, but it must suffice until "Dusty" Rhodes can take time out to write us a real description of the processes involved in words that both chemists and people can understand.

The Leak That Failed

With all due respect to ammonia and the yeoman service performed by this old-time refrigerant for many years in ice-making and other heavy refrigeration service, it is a matter of incontestable record that sulphur dioxide, Freon, methyl chloride, and other refrigerants have swept the field all the way from household refrigerators to thousand-ton comfort cooling installations.

In fact, to such a pass have matters come for the once heavyweight refrigerating champion of the refrigerant world that it is said that so few new installations call for its services that from 90% to 95% of all ammonia used in refrigerating service is used only to replace ammonia that has escaped. During olden times nobody worried unduly over these leaks, because of the inexpensiveness of ammonia.

So it came to pass that as modern trends demanded modern refrigerants for new installations, the ammonia industry was kept alive largely because of the replacements demanded by old leaks.

But now that leak has failed.

For the modern trends which with them brought the lower pressure and non-corrosive refrigerants also created a new necessity, namely that of preventing loss through leaks of "improved" but relatively costly cooling media.

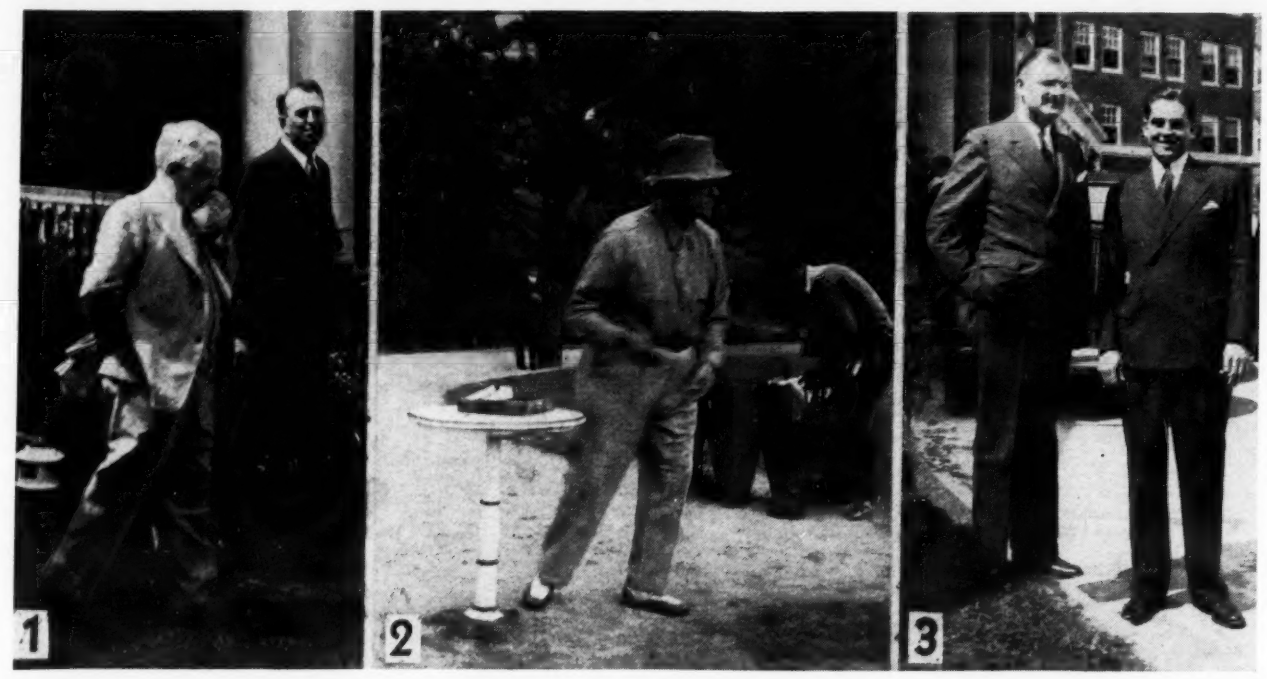
So there came into general use the soldered copper fitting and tube refrigerant system, and the refrigerant-resisting packing, and with them leak-defying skill in fabrication of equipment and refrigerant distribution systems.

In other words, the economy-born necessity of preventing loss of expensive refrigerants forced the industry to learn how to make refrigerants stay where they belong.

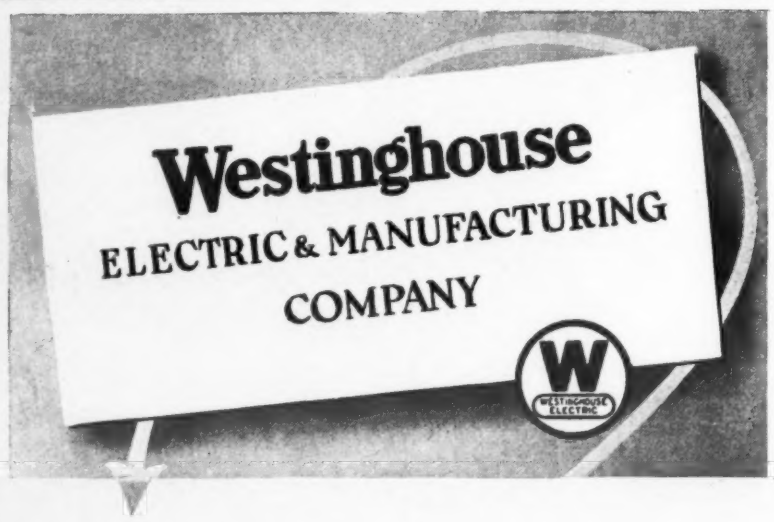
So the new art often is applied to the ammonia system as well, with the result that the manufacturers have suffered because a considerable percentage of their product is used only to replace loss through leaks.

Thus we have the story of the "Leak that Failed."

Mornings and Evenings for Business — Afternoons for Play



(1) William Shaw of Chicago, newly appointed publicity counselor of the air-conditioning manufacturers and Tom Pendergast of Universal Cooler Corp., Detroit. Mr. and Mrs. Pendergast did much horseback riding on the Hot Springs trails. (2) Willis H. Carrier getting ready to drive from the first tee. (3) J. L. Rosenmiller, sales promotion manager and J. R. Hertzler, air-conditioning sales manager of York Ice Machinery Corp., York, Pa., at the main entrance of The Homestead.



Now an

AUDITORIUM LICENSEE

Westinghouse—one of the world's greatest engineering organizations—joins with the other notable concerns listed below, as Licensees under Auditorium Patents. Westinghouse Electric & Manufacturing Company is authorized to install, or grant permission to others to install, Central Station Air Conditioning Systems embodying Auditorium inventions. It also has the right to manufacture and sell Unit Conditioners utilizing these same patents.

American Blower Co.
Detroit, Mich.

Buffalo Forge Co.
Buffalo, N. Y.

Carrier Corp.
Newark, N. J.

Frick Co.
Waynesboro, Pa.

General Electric Co.
Schenectady, N. Y.

J. O. Ross Engineering Corp.
New York, N. Y.

The Cooling & Air Conditioning Corp.
Division of B. F. Sturtevant Co.
Hyde Park, Boston, Mass.

Westinghouse Electric & Manufacturing Company
East Pittsburgh, Pa.

York Ice Machinery Corp.
York, Pa.

Any of the Licensees above, their Branch Offices, Distributors, or Dealers can furnish information and diagrams describing Auditorium Systems. For details of the Auditorium Plan you may write direct to

AUDITORIUM CONDITIONING CORPORATION
New York Office—17 EAST 42nd STREET

CURTIS OFFERS A COMPLETE LINE of CLEANABLE SHELL and COPPER TUBE TYPE CONDENSING UNITS
THE complete Curtis line of 86 condensing units includes not one, but 7 models with shell and tube condensers, ranging from 3 to 30 H. P. All Curtis shell and tube condenser-receivers have removable heads for cleaning, automatic water valves and spring loaded safety valves. All compressors are equipped with Timken-tapered roller main bearings and Curtis' patented "Centro-Ring Pressure" lubrication, with no wearing parts, providing positive, trouble-free oiling.
There is a Curtis unit for every air conditioning and refrigeration need—from 1-6 to 30 H. P. Eighty-three years of manufacturing experience and a million-dollar corporation stands behind every Curtis product.
Represented in Canada by
Canadian Curtis Refrigeration Co., Ltd.
20 George St., Hamilton, Ontario
CURTIS
CURTIS REFRIGERATING MACHINE CO.
Division of Curtis Manufacturing Co.
1912 KIENLEN AVE. ST. LOUIS, MO.

1936 Advertising of Air Conditioning by Manufacturers Given

(*Concluded from Page 1, Column 4*)

spent a total of $29,975 in air-conditioning advertising during last year, $26,675 going for summer-cooling equipment.

Delco-Frigidaire Conditioning Corp. had total national magazine expenditures of $18,840 during the year, $10,178 being for air conditioning and automatic heating, $2,747 for Delco-Heat Conditionair, and $5,915 for its line of room coolers.

Of other companies in the summer air-conditioning field, Kelvinator Corp. spent $16,230 in three publications, American Blower Corp., $1,320, and Crosley Radio Corp., $550.

* * *

Airtemp

Airtemp, Inc.	
(Airtemp air conditioners and home heating systems)	$ 67,830
Saturday Evening Post	33,200
Time	15,495
Better Homes & Gardens	11,205
The American Home	7,930

American Blower

American Blower Corp.	
(American Blower air conditioning)	$ 1,320
Fortune	1,320

American Radiator

American Radiator Co.	
(American Radiator conditioning systems)	$176,050
Saturday Evening Post	38,000
Better Homes & Gardens	36,050
Collier's	28,000
The American Home	26,500
Time	15,235
House & Garden	10,500
American Magazine	9,990
National Geographic	5,171
Good Housekeeping	2,000
Pictorial Review	1,713
Harper's Bazaar	876
Vogue	840
Esquire	625
The Parents' Magazine	550

Carrier

Carrier Corp.	
(Carrier air conditioning)	$ 29,459
Time	23,925
Fortune	3,735
Business Week	1,630
The New Yorker	169

Crosley

The Crosley Radio Corp.	
(Crosley Coolrest)	$ 550
Time	262
Literary Digest	189
The New Yorker	99

Delco-Frigidaire

Delco-Frigidaire Conditioning Corp.	
(Air conditioning and automatic heating)	$ 10,178
Time	8,215
House & Garden	1,200
The American Home	763
(Delco-Heat Conditionair)	2,747
House & Garden	1,200
Time	785
The American Home	762
(Electric room cooler)	5,915
Time	5,315
House & Garden	600

General Electric

General Electric Co.	
(General Electric air conditioning)	$ 26,675
Saturday Evening Post	12,000
Time	5,850
Fortune	3,300
Business Week	2,825
Better Homes & Gardens	2,700
(General Electric oil-burning warm-air conditioner)	$ 3,300
Better Homes & Gardens	2,700
House & Garden	600

Hoffman

Hoffman Specialty Co., Inc.	
(Controlled heat with air conditioning)	$ 6,005
The American Home	2,655
Saturday Evening Post	2,000
Better Homes & Gardens	1,350

Holland

Holland Furnace Co.	
(Holland air conditioning)	$ 23,314
Better Homes & Gardens	9,450
Time	6,525
Country Gentleman	4,350
The American Home	1,525
Fortune	1,464

Kelvinator

Kelvinator Corp.	
(Kelvinator air conditioning)	$ 16,230
Time	10,450
Fortune	3,300
Business Week	2,480

Sunbeam

The Fox Furnace Co.	
(Sunbeam air conditioning)	$ 38,855
Better Homes & Gardens	16,200
The American Home	14,320
Time	8,335

York

York Ice Machinery Corp.	
(York air conditioning)	$ 97,910
Saturday Evening Post	64,000
Time	18,300
Fortune	9,055
Business Week	6,555

BRUNNER

Send for the New

REFRIGERATION CATALOG

Five Models of Compressors

Forty-seven Models of Condensing Units from ¼ H.P. to 15 H.P.

BRUNNER MANUFACTURING CO.

UTICA, N.Y., U.S.A.

Tulsa Installations Range To 900 Tons

(*Concluded from Page 1, Column 3*)

the Kennedy building, and the Skelly Oil building.

Systems to be installed in the buildings mentioned range in size from 150 to 900 tons refrigeration. The Kennedy building system is scheduled to be put into operation about June 1, with the others following by the end of the year.

Major installations contracted for this spring are as follows:

* * *

Installation	Equipment	Tonnage
Philcade Building (14 stories)	Frick	350
Philtower Building (24 stories)	Frick	350
Kennedy Building (10 stories)	Westinghouse Steam Jet	350
The Palace Building (10 stories)	Frick	150
Skelly Oil Building (10 stories)	Ingersoll-Rand Water Vapor	150
Thompson Building (2 floors)	Westinghouse	50
Vandevers Dept. Store (1½ floors)	Westinghouse	32
National Supply Building (3 stories)	Westinghouse	75
Virginia Dare Dress Shop	York	10
Boswells Jewelry Store	York	15
W. C. Norris Mfg. Co.	Westinghouse	10
Adams Hotel (3 floors)	Lipman	25
National Bank of Tulsa Building and Tower (15 floors)	York	900

Worthington Issues Compressor Bulletin

HARRISON, N. J.—Worthington Pump & Machinery Corp has just issued a new eight-page bulletin covering its line of vertical single-cylinder single-stage air-cooled and water-cooled compressors.

Sectional views of construction features, detailed specifications of the feather-type valves and other principal elements, rating tablets, and dimension tables are contained in the illustrated booklet.

Residence and Office Cooling Jobs Predominate In Houston April Installations

(*Concluded from Page 1, Column 2*)

Two "One's-A-Meal" eating places were conditioned during the month, one totaling 8½ and the other 5 tons. Offices conditioned included those of West Produce Co., Perfection Aire, Tex-O-Can flour mills, F. H. Maloney & Co., Erwin Bag Co.

Airtemp led in total number of installations reported for the month, with five, York and Carrier following closely with four jobs each to their credit. General Electric and Perfection Aire had two jobs each, and Westinghouse the remaining one.

Tabulated list of April air-conditioning installations in the Houston territory follows:

* * *

Name	Type of Equipment	Tons
E. K. Nold (Residence)	Airtemp	.75
West Produce Co. (Office)	Airtemp	2.7
St. Elmo (Theater)	Airtemp	50.0
Blue Bonnet (Theater)	Airtemp	65.0
One's-A-Meal (Rusk Ave.)	Airtemp	5.4
W. M. Rice (Residence)	General Electric	10.0
Tex-O-Can Flour Mills	General Electric	2.0
Perfection Aire (Office)	Perfection Aire	5.0
L. M. Robertson (Office)	Perfection Aire	7.5
F. H. Maloney & Co.	Westinghouse	1.5
South Texas Cotton Oil Co.	York	6.0
Erwin Bag Co.	York	3.0
One's-A-Meal (1001 Main)	York	8.5
Standard Oil Field Supply Co.	York	6.0
River Oaks Country Club	Carrier	50.0
Harry Susman (Residence)	Carrier	4.0
Maurice Hirsch (Residence)	Carrier	4.0
Battlestein, Inc. (Addition)	Carrier	48.0

Advertising Campaign Launched by Airtemp

DAYTON—Radio, newspapers, and billboards will be used in the comprehensive dealer cooperative advertising campaign just launched by Airtemp, Inc., subsidiary of Chrysler Corp., according to Edward Bozorth, advertising director.

Dealers and distributors of Airtemp equipment will be given an opportunity to choose from among 50 different newspaper advertisements ranging in size from 70 to 580 lines, Mr. Bozorth said.

Nature of these advertisements will vary widely. Some will be of dramatic poster-type, using little copy but illustrating by means of comparative photographs the comforts of Airtemp conditioning, and boldly displaying both the name of the company and of the dealer. Others will be of cartoon and comic-strip nature, dramatizing the comfort of air conditioning in a humorous pictoral style.

Spot radio announcements and full-color billboard posters also will figure prominently in the advertising campaign.

Among the Airtemp units to be backed by heavy advertising this summer is the new 3-hp. "All-In-One" commercial air conditioner for shops, stores, and offices.

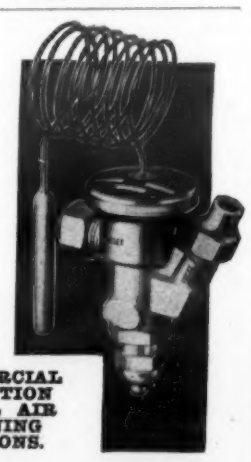
Gas-Powered Air Conditioning To Be Shown at N. Y. Fair

NEW YORK CITY—Exhibition of gas-powered air-conditioning equipment in a separate building depicting the industry at the 1939 New York World's Fair has been approved by the executive boards of the American Gas Association and the Association of Gas Appliance and Equipment Manufacturers.

Stuart to Retail Frigidaire In Bangor, Maine

BANGOR, ME.—G. M. Stuart Co., Inc., has opened here to handle Frigidaire refrigerators and other electrical appliances. Gordon M. Stuart, proprietor, has had 30 years' experience in the appliance field.

The Model 205 here shown is the smallest of the A-P line of Thermostatic Expansion Valves. Capacity ½ to 2 tons Freon.



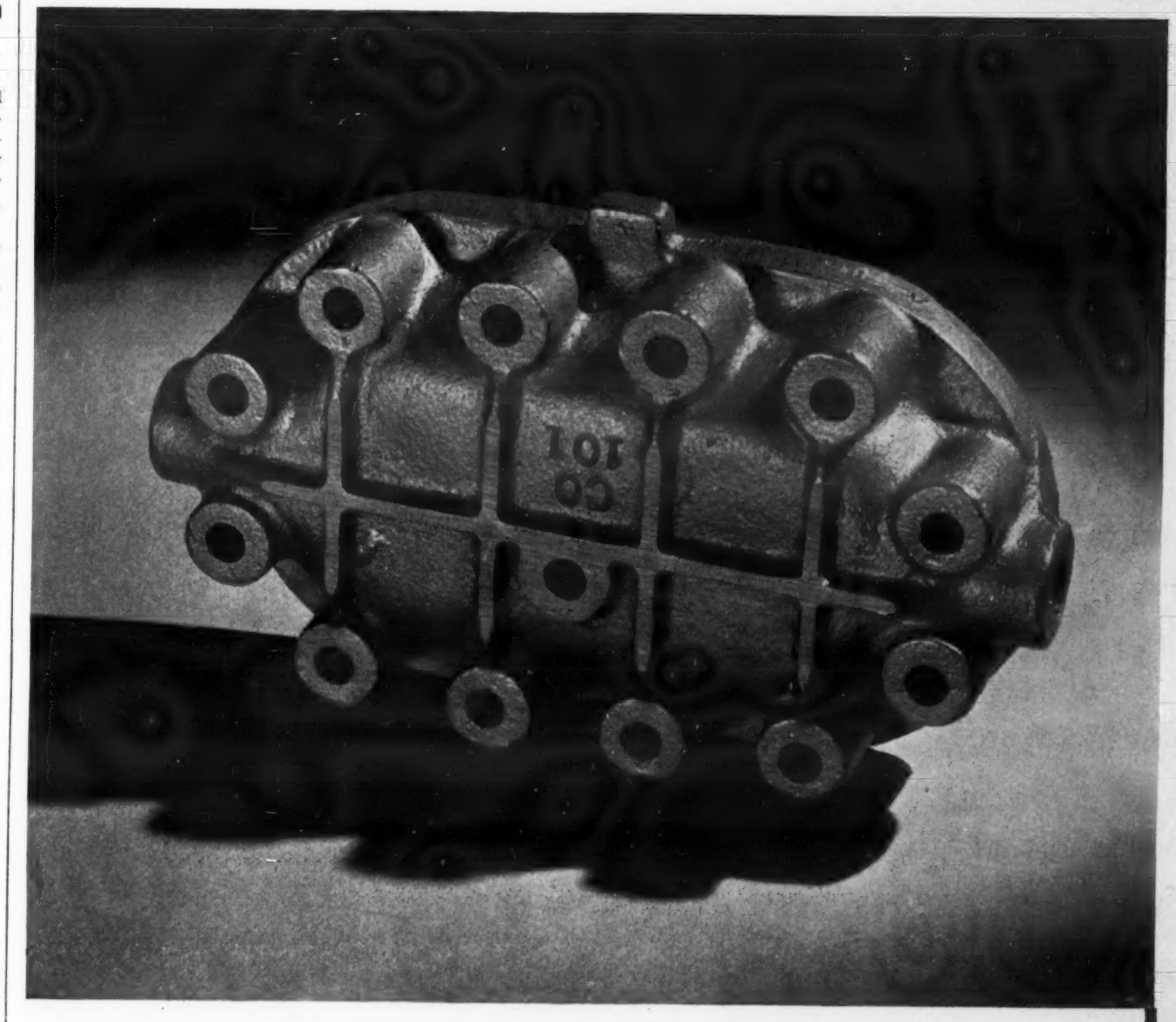
FOR COMMERCIAL REFRIGERATION AND SMALL AIR CONDITIONING APPLICATIONS.

In every field, certain products stand out as the best of their kind. In this preferred class you will find A-P Expansion Valves. Simple, leak proof and super sensitive. Perfect control even though encased in ice.

Stocked by Leading Jobbers Everywhere.

AUTOMATIC PRODUCTS COMPANY

MILWAUKEE WISCONSIN



This Is the Water-Cooled Head

Water-cooled, it keeps the head temperature down.

Many compressor people have missed the issue—they either half-cool the head or don't cool it at all! But a full cooled head, by keeping the valves cool, preserves the efficiency demanded by Modernized Refrigeration.

Mills Condensing Units

Mills Novelty Company

4100 Fullerton Avenue, Chicago, Ill.

Around the World

With George 7. Taubeneck

Ranging from the significance of Wallis Warfield to the merchandising philosophy of a hat salesman, the editor's glances at English life and characteristics are designed to illuminate the dark recesses of the British mind for puzzled Americans.

Continued in the next issue will be his examination of London, monarch of all cities—and world's best market for refrigeration outside of the United States of America.

Our Debt to Wallie

No matter what you think about the Abdication—"the greatest news story since the Resurrection"—you should know that Edward's Wallie may have done a tremendous service to the United States of America.

She may have kept us out of war.

Granted: that sentence has some of the earmarks of a wild statement. Granted further: she hadn't the slightest idea that she was making any contribution to American peace at the time.

But it just happened that way. And here's how:

England feels foredoomed to another tremendous war. She feels that she will need our help in that war—our men, our money, our guns, our inventive genius, our production facilities.

And the Gentlemen from Downing Street have been engaged for almost two years in a subtle, yet enormously extensive, publicity campaign designed to enlist America on England's side in the next conflict.

L'Affaire Simpson upset the apple cart.

* * *

We Two Together

"America and England together," I heard over and over, all around the British Empire, "could police the world. Nobody would dare start anything if we were allied."

That's the theme of the campaign. Most Englishmen who voice those sentiments seem sincerely to believe them; although almost no serious and informed student of foreign affairs today feels for a moment that anything, any alliance, can halt the inevitable progress of Three Dictatorships (Germany, Italy, Russia) toward war.

England and America together would be a tough adversary for any foe or combination of foes. Not necessarily invincible, but tough. That, however, isn't the point. This is:

America has no business in the next war.

No matter where it starts, England can't keep out of it. She's vulnerable in too many points. Japan eyes Malaysia covetously. Insurrection threatens in India. Palestine is in the throes of a minor civil war. Italy menaces Egypt and the Mediterranian possessions. Germany stirs hungrily on the continent. A tremendous uprising of Moslems all through the East is possible.

Why should we pull England's chestnuts out of the fire?

America is menaced by nobody. Canada is the world's finest neighbor. A new era of good feeling is opening in our relations with Central and South America. We are getting out of the Philippines—and just in time.

The United States has plenty of troubles at home without looking abroad for more. Yet that is exactly what might have happened (it could still happen) had it not been for Mrs. Simpson.

* * *

English Attitude

You see, the English are inclined to regard us as a Colony Gone Wrong. They overlook the fact that the flood of immigration during the nineteenth century far overbalanced the English element in our population.

Even though we speak English, and admire the English, we are not English. We need feel no call to preserve "the homeland."

But they think otherwise. They think we should be more sympathetic toward their problems. They think we should cancel the war debts. And they think we should complete a military alliance with their forces.

As indicated before, the publicity campaign designed to further this end was going full blast last year, when the events leading up to the Abdication put a healthy crimp in it.

First of all, popular sympathy for the Royal Lovers was widespread in America. But more important than that, the affair broke the back of the campaign *in England.*

A most important part of that publicity campaign was the education of the English people to a new appreciation of the United States. The idea was to engender good feeling between the nations by eradicating from the English minds the impression that Americans are semi-barbarous.

That vast feeling of superiority which the average Britisher feels for the average American had to be broken down before Downing Street could feel safe in coming out into the open with its drive for an English Speaking Union.

And then came Mrs. Simpson. She typified to the English almost all their notions about America and the Americans. She had been twice divorced. She had more money than was good for her. She was "fast." She was glamorous. She was not conservative.

She didn't chew gum, eat peanuts and hot dogs and ice cream cones all at once, or carry a machine gun—but they figured that she'd like to, if she could get them in England. She missed the specifications, really, on one point only: She was no dope. They couldn't make a sucker out of her.

* * *

Sense of Humor

Having had a say on the subject of the proposed Anglo-American Alliance for Policing the World, it is now a pleasure to step down from the pulpit and do my bit toward correcting a few false impressions.

Fact is, I'm going to play right into the hands of the gentlemen from Downing Street. For I like the English people—tremendously. And America's notion of the English is just as wrong as English misapprehensions about the Americans.

Englishmen are regular fellows. They're men, too—not foppish sissies. They don't talk through or down their noses. And they do have a sense of humor.

Watch them at a cinema. Their laughter is more spontaneous, heartier, than that of any other theater audience you will find elsewhere in the world.

They roar at quips which would bring only grim smiles to Americans. Example: Patsy Kelly says in one picture, "and speaking of fish, that reminds me—I must call my boy friend." I heard them yell at that one in a big London movie palace.

W. C. Fields merely has to open his mouth to turn the house into a bedlam. Chaplin is an immortal—they'd bury him in Westminister Abbey, probably, if he died over there.

You hear uproarious laughter on the streets, in offices, in homes. The English love to laugh, and they catch the point to a joke as quickly as you and you and you.

* * *

Loyalty to King

English loyalty to their king is a very real thing. They have no intention of *obeying* him, but they *love* him.

Edward was immensely popular. I was there when a malcontent threw a revolver at him during a parade. The city practically suspended operations to offer up prayers of thanksgiving that their King had been spared.

"God Save *Our* King" is the way they sing it—and they sing it and mean it.

That night in a vaudeville show, someone in the audience leaped to his feet and shouted: "Three cheers for His Majesty!" The theater shook with the response.

The throne is a source of strength to English *esprit de corps.* It performs a valuable function.

* * *

The English Language

English people commonly resent American slang. They consider it a perversion of a beautiful tongue. Many of them join societies to fight the importation of American films, so that our "mutilation" of the language may not creep into the common speech of their "tight little isle."

Fact of the matter is that English mangle their own language almost as much as we do.

An American scholar, a purist in speech, would have difficulty understanding the full import of many an ordinary conversation among Englishmen.

To begin with, there are two kinds of English: Cockney and Polite. Whichever form you use denotes your birth and social position. If your drop your aitches, you're no gentleman. That's why English families spend exorbitant sums on the education of their children in private schools—they fear that association with Cockney sons in common schools might corrupt their speech.

Polite English is most pleasant to hear. They *sing* their phrases. Inflection falls in set patterns. Americans are rather melodramatic with their emphasis on words and phrases; the English are stylistic. They talk something like this:

you
Have ee?
had
your
tea—

In England you must get used to hearing: "a spot of," "a bit of a," "dash it all," "jolly well," "I say," "fourish" (it's "fourish," instead of "4:14 o'clock"), and contractions of nouns by using "er" ("Rugger" for "Rugby," "decider" for "deciding game in the series," etc.)

"Mind the door," or "mind your step," or "mind you" are all commonly used for "watch" or "look out for" or "remember."

But we havn't space here for a treatise on comparative philology.

* * *

Booming London

London today is booming. It is more active, richer, than New York or Chicago or Paris or Berlin.

There is a constant, enormous influx of money into London. They make it in the colonies, spend it in London. Money is sent to London from all over the world for safe keeping.

It is the Croesus of cities.

* * *

On Buying a Hat in London

You decide you need a new hat in this formal London town—the most correctly dressed spot in the Occident—and you discreetly inquire from one of your impeccably clad friends the name of a good haberdashery.

He tells you, and on the back of his business card writes down the name of the shop and its address.

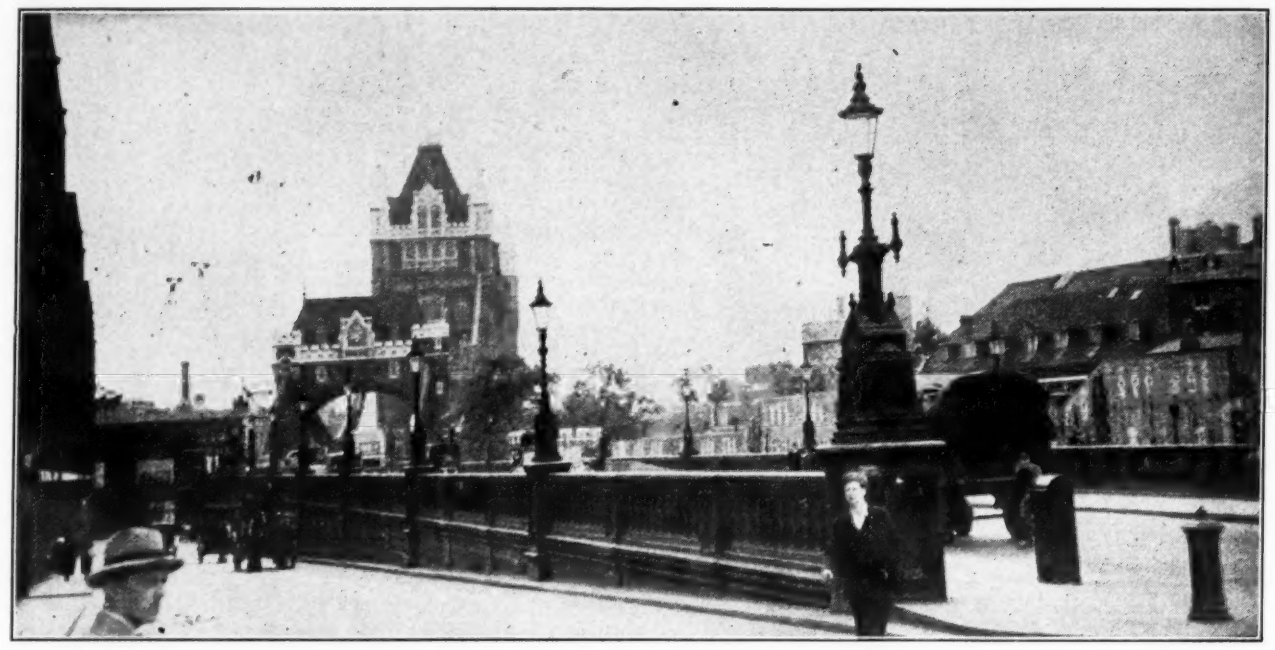
You go, meditating the while on the information that the establishment has served kings and dukes and suchlike since 1672.

You step into this antiquarium, and well believe the statement as to its age. Apparently nothing has been changed since Sir Francis Drake stepped across the threshold and asked for a new plume.

As you wait for a clerk to notice you, the names on hat boxes stocked neatly high up the walls give you a tingle. Sir Philip This. The Duke

(*Continued on Page 12, Column 1*)

London Bridges Don't Fall Down



Contrary to the old saw, London's bridges look as if they'd never fall down. Here is one of medieval type.

Dead Pan

Guards stationed in sentry boxes around Buckingham Palace do not smile, change expression, or move during their short vigils.

'Old English' Homes Abound Along the Narrow Lanes Which Honeycomb the Country

(1 and 2) Here are two fine examples of those old English homes which so delight visitors. (3) Country roads in England are very narrow, not so smooth, and winding. (4) A former royal country home—now a museum—this startling prototype of India is really a surprise to anyone who has previously wandered through its environs—from which the first three snapshots were taken.

AIR CONDITIONING NEWS

Doctor Predicts Animal Air Conditioning

CINCINNATI — Air conditioning for livestock, by means of which farmers should increase their profits, is predicted by Dr. C. A. Mills, professor of experimental medicine at the University of Cincinnati.

"Animals," said Dr. Mills, "are just as responsive as man to atmospheric or climatic environment. Air conditioning is particularly needed by animals whose bodies are poorly adapted to meet sudden changes, such as poultry and heavily furred beasts.

"For this domestic problem, I believe major relief will come through proper insulation of buildings, coupled with a definite means of regulating and handling the air in them."

New Chicago Carrier Offices Windowless

CHICAGO—Local offices of Carrier Corp. were moved May 7 into windowless, air-conditioned rooms on the seventh floor of Merchandise Mart.

Air conditioning is provided by a central-station system, to which is connected a 380-ton Carrier centrifugal refrigerating machine. The offices are illuminated by indirect electric lighting.

Six private offices, three conference rooms, a general office space, a salesroom, and a display room with a floor area of 10,000 square feet are included in the new setup.

Gar Wood Introduces Unit For Low-Cost Homes

DETROIT—A new automatic heating and air-conditioning system specifically designed and priced for homes in the $5,000 to $7,000 bracket, and designated as the E. W. model, will soon be announced by Gar Wood Industries, Inc., as the lowest priced unit in the company's history, according to Frank H. Dewey, general manager of the air-conditioning division.

The new unit will be sold as a complete system, including the air ducts which deliver air to and from the rooms. Model E.W. will provide automatic heating, air filtering, humidifying, and forced warm air circulation in winter, and air filtering and blower cooling in summer.

Colorado Airtemp Outlet To Move to New Office

DENVER — The Colorado Conditioned Air Co., distributor of Chrysler Airtemp products in this area, will move to new headquarters in a remodeled and air-conditioned store at the corner of 16th and Broadway June 1.

According to E. L. Smith, manager, the store will be the only air-conditioned air-conditioning showroom in the city.

Tulsa Office Building Installs Air Control Stipulated in Lease

TULSA, Okla.—An air-conditioning system for the 15-story Thompson Bldg. here, which is occupied by a number of the larger oil companies, is now being completed by the local branch of Natkin & Co., Westinghouse Air-Conditioning distributor for several Mississippi Valley states, according to Bert Natkin, local manager.

The system is to condition the new 8th and 9th floor quarters of the E. H. Moore Co., owners and operators of the new Southern Oklahoma Pitts pool, who stipulated air conditioning upon signing a long term lease for their new quarters.

Since it was not considered advisable to locate the refrigerating equipment in the basement and extend either refrigerant or chilled water lines through all floors to so great a height, it was decided to make a separate self-contained air-conditioned unit of the 8th and 9th floors.

Therefore, the open stair wells were sealed off at these floors and a 20 x 25-ft. equipment room was partitioned off on the eighth floor for housing the air-conditioning equipment. This room was heavily insulated to prevent escape of equipment noise.

In this room are located the supply fan (New York Blower Co.), direct-expansion type cooling and dehumidifying coils, outside air tempering coils for winter ventilating use, and the Westinghouse refrigerating equipment consisting of two 25-hp. sealless compressors with evaporative condensers.

Supply ducts are installed above new suspended ceilings which were installed in the corridors for the purpose of concealing ducts. Air is supplied through high "Uniflo" directional type grilles, and returned to the corridors which serve as recirculating chambers or ducts for returning a proportion of the air to the air-conditioning equipment. Both outside and recirculated air is filtered.

Similar air conditioning is contemplated for the future, arranged in similar independent two-floor units, so that approximately 14,000 sq. ft. of floor space will be served by each unit.

With this arrangement, it is felt that maximum flexibility of control will be obtained with minimum cutting of building construction, use of rentable space, and passage of ducts and piping throughout the building.

Superior Automatic Heating Co. Moves Headquarters

FT. WAYNE, Ind.—Superior Automatic Heating Co. has moved to the Hotel Indiana Building, 1111 S. Harrison St., reports C. P. Meyer, president. Mr. Meyer also states that Indiana Tempered Air, Inc., which he organized with A. M. and W. J. Poinsatte, will operate in Indianapolis.

New Jamaica Theater To Be Air Conditioned

KINGSTON, Jamaica—A 100-ton Carrier air-conditioning system has been ordered by Cinema Co. of Jamaica, Ltd., to be installed in its 1,500-seat Carib Theater under construction here.

Cost of conditioning the theater, said to be the largest on the island, has been estimated at $25,000 to $30,000. The order was obtained by John F. Des Reis, Carrier field manager in the Caribbean and West Indian territory.

Carrier Corp. is sending a specially trained engineer to handle the installation and to solve the special problem caused by tropical climatic conditions.

A 15-ton Carrier system has been installed to condition the 20 offices of Shell Oil Co. in Breezy Castle, Kingston suburb.

Butterfield Joins Gar Wood Conditioning Sales Staff

DETROIT—Charles A. Butterfield, formerly sales engineer of R. L. Spitzley Heating Co., Delco distributor in this territory, has been added to the sales staff of the air-conditioning division of Gar Wood Industries, Inc., according to Norman Saylor, branch manager.

Mr. Butterfield also has been connected with General Electric's air-conditioning department, and has been Chicago and Detroit representative for Hess Warming & Ventilating Co.

Portland Puppy Laundry Now Air Conditioned

PORTLAND, Ore.—An air-conditioned puppy laundry has been installed by Dr. C. T. Norman, owner of the Hollywood Dog and Cat Hospital here.

Equipment consists of a new dog-drying cabinet, in which a "wet washed" puppy can be air conditioned and dried in 15 minutes, while undergoing a beauty treatment in the form of special light and heat rays.

In the system, heated air is pumped into a special drying cabinet from a new electro-gas furnace serving the entire building, and having a capacity of 2,000 c.f.m. The cabinet was designed by Dr. Norman from long experience in the handling of pets.

Installation of the equipment was made by the Lynch Furnace Co. of Portland.

Fedders Equipment to Cool Hollywood Drug Store

HOLLYWOOD, Calif. — Fedders air-conditioning equipment, consisting of a 30-ton coil, model "33" high-capacity thermostatic expansion valves, and a shell-and-tube type dual condensing unit, provides comfort cooling for both drug department and restaurant of Thrifty Drug Co.

Installation was made by Caraban Engineering Co., of Los Angeles. Coils, valves, and condensing unit were purchased through Franklin G. Slagel Co., Los Angeles, Fedders west coast representative.

Mercoid Announces Personnel Changes

CHICAGO — The Mercoid Corp., manufacturer of automatic controls for the heating, air-conditioning, and refrigeration industries, recently announced a number of personnel appointments.

R. M. Keatts and J. F. McCauley, who recently completed the factory training course, have been transferred to the company's sales department. Mr. Keatts will work out of the Cincinnati office, and Mr. McCauley will be stationed in the Cleveland sales territory.

William Ufer and Walter Lischett have been transferred from the company's service division to the sales department in the central offices here.

J. F. Chambliss, formerly with Edwin F. Gore & Co., Chicago, has been appointed auditor of the company.

Servel Lists Water-Cooled Equipment in New Catalog

EVANSVILLE, Ind.—The electric refrigeration and air-conditioning division of Servel, Inc., has just issued a catalog listing and describing its 1937 line of water-cooled air-conditioning machines.

Units ranging in capacity from ½ to 20 hp. are described in the catalog, which also lists specifications of the company's evaporative condensers, and dimensional data on both the condensers and machine units.

Light, Flexible, Corkboard

ENDS CONDENSATION ON COLD AIR DUCTS

Armstrong's DI Corkboard effectively protects light duty conditioned air ducts

BOTH PICTURES SHOW *how Armstrong's DI Corkboard was used to prevent condensation on ducts in the basement of the Lafayette Building, Philadelphia. Installation by John R. Livezey. Note how readily this flexible corkboard conforms to the curved surfaces of these ducts.*

WHERE inside ducts carry large quantities of cool air, the problem of condensation is frequently encountered. An effective method of preventing this condensation is provided by the new Armstrong's DI Corkboard.

DI Corkboard is a light, flexible material. It is furnished in sheets 12" x 36" x ½", coated on one face with an asphalt finish ironed on at the factory. This asphalt coating is a protection against moisture and also adds strength to the insulation. DI Corkboard is easily cut and shaped with a sharp knife, and conforms readily to curved surfaces. Because of its light weight, this new type corkboard is usually cemented in place with adhesives alone. Either Armstrong's Waterproof Cement or Erection Asphalt may be used. When additional fastening is desired, bands or wires may be used. Any standard insulation finish for interior work may be applied over this corkboard.

Use Standard Corkboard and Cork Covering to Guard Refrigeration

While Armstrong's DI Corkboard serves effectively to prevent condensation, Armstrong's Standard Corkboard should be used for lower temperatures and to conserve refrigeration. Together with Armstrong's Cork Covering, this efficient insulation guards against refrigeration loss, gives many years of service.

Armstrong engineers will gladly help you plan insulation for ducts and cold lines. For complete information about, and samples of, any Armstrong Insulation material, address Armstrong Cork Products Co., Building Materials Div., 1002 Concord St., Lancaster, Pa.

Armstrong's DI CORKBOARD

Yes Sir! That's Really a Seal!

THEY SEAT AND SEAL IMMEDIATELY

•

THE LONGER THE WEAR THE BETTER THE SEAL

•

FULLY GUARANTEED

•

AERO SELF-ALIGNING SEALS

COVERED BY U.S. PATENT No. 2,067,540 OTHER PATENTS PENDING

AERO PRODUCTS CORPORATION
36-52-36th St., Long Island City, New York

Downtown London Has Its Individual Character; Yet It Could Be New York

(1) Regent Street, just off Piccadilly Circus, has its double-decker buses. (2) In the financial district—note top-hatted gentleman in center. (3) London cabbie. (4) Two English misses discuss shopping.

(*Concluded from Page 10, Column 5*)

of That. H. M. the VIII, H.R.H. Inperson. E. Phillips Oppenheim. H. G. Wells. Baron Upwell. Count de Change.

Eventually an emaciated person in a black cutway and a wing collar approaches, gingerly, and from a safe distance inquires the nature and purpose of this obviously unexpected and possibly distasteful visit.

You reply, not affronted because the spell is on you, that you want a hat.

"Ah, yes. And, ah, may we inquire to whom we are indebted for the suggestion that you come here?

You offer him the card, with the address that your friend has given you. He takes it, still gingerly.

After it has been scrutinized carefully and deliberately, it apparently passes muster.

"And, ah, for what occasions do you wish to wear this hat?

You gulp, feeling a bit ashamed at the knowledge that you haven't been invited to a garden party or something else which might require a gray topper, and reply:

"For business and street wear."

The eyebrows raise above the rimless noseglasses, as only an Englishman can raise them.

"Indeed?" frostily. "And the size?"

"Seven and one-quarter." you answer, shifting to the other foot.

He looks at you coldly for a long moment, sizing you up from head to foot, in the manner of a street-corner-Johnny appraising a passing female.

Eventually he moves in measured tread over to the dusty hat gallery along the wall. Without hesitation he selects a navy blue smooth felt, with unfinished brim, and hands it to you.

You try it on in front of an old, one-way mirror. It *does* seem rather "right."

But you decide that surely you should see another model or two, just for comparison.

Diffidently you vocalize this desire.

The clerk takes off his noseglasses, polishes them, and replies, coldly:

"If the gentleman is not satisfied, there are a number of shops down on Bond Street which, I am sure, have a large selection."

As he starts to turn away, you say:

"I'll take it."

You pay two pounds, put on the hat, and walk out, feeling that you have Walked With Kings . . . and lost the common Touch.

It is gray and chilly outdoors, and soon, of course, it will rain.

* * *

London, England

For the benefit of Clem Clatfeltor down there in London, Ark., which town has a population of 355 and is perched on the Arkansas River three counties east of Van Buren, may we say that there are several other towns throughout the world bearing the same name as his native village, not the least noteworthy of which is London, England.

This other London is somewhat larger than the one in the Ozark State, its population being in the neighborhood of 8,300,000. It is also quite a bit older, having been used as headquarters by the legions of Caesar back in the B.C. years.

Britain's capital covers a large chunk of the southeast part of England, spreading far back from both banks of the River Thames into six counties, Middlesex, Essex, Kent, Surrey, London, and Hertfordshire. In all, London has an area of about 700 square miles.

It really isn't a city at all, being more a motley collection of towns and districts which have been loosely joined together as the centuries have passed, so that today they form a congealed mass of streets, buildings, parks, and people.

The original City of London is a tiny community huddled close to the great dome of St. Paul's Cathedral. Its extent is only 678 acres. Yet, despite its small size, this original city is the heart of the British Empire's business and financial life, and of the kingdom's discreet but powerful daily press.

Greater London, however, is a monster. Taking Charing Cross as its center, London spreads out for as much as 15 miles in every direction. Greedily it has crept over such erstwhile country towns and villages as Chislehurst (no doubt the home of many appliance dealers), Harrow on the Hill, Croydon, Edgware, Kew, Wimbledon, Woolwich, Greenwich, Chiswick, Sydenham, Tottenham, Putney, Willesden, and Streatham. These are all now part of the metropolis.

And yet London's voracious appetite is not appeased; its "octopusian" activities have not abated. Right now London is in the midst of the greatest building and expansion boom in its history.

Slums and crowded areas are being cleared to make way for the establishment of factories, the construction of new homes, the laying-out of streets, and for other developments. Vacant territory in the city is at a premium. The London County Council has to grit its teeth and hang on to the parks and playgrounds it maintains for its wards, the citizens.

To house the families ousted from the destroyed slums, 600,000 new homes and a great many flats have been constructed in recent years, most of them in the roomier suburbs.

Other new suburbs have been popping up like mushrooms all over the outer edges of the city. A good many of them were created as dormitories for the thousands of workers (and their families) employed in the new factories in outlying districts.

* * *

New Industrial Center

England's industrial center is rapidly shifting from the North—which was hard hit by the depression, and is showing little sign of regaining its lost strength—to London.

London already was England's greatest shipping center, business center, social center, cultural center, historical center; and now it is the industrial center, too.

With this expansion, London is eating up more and more of the territory in the counties in which it is situated. Middlesex, it is expected, will be completely absorbed in the city before the next half century is gone. Southward into Surrey marches the city. Little towns in Kent, Essex, and Herts are being gobbled up as the metropolis reaches out along the main highways radiating into the countryside.

The population of London, even now an almost astronomical figure, is increasing at the rate of about 15,000 per year.

Outer London, however, is not especially romantic. It is Old London that will attract you. The City, Westminister, Chelsea, the Pool—these are the spots to see.

Let's begin with the City. Immediately familiar names come to the tongue. St. Paul's, Fleet Street, Threadneedle Street, the Bank, the Guildhall, Cheapside, London Bridge, Ludgate Hill, Tower Hill, and the Tower itself.

With the possible exception of New York's Times Square, the most famous corner in the world is the Bank, where Cheapside, Threadneedle Street, Cornhill, and Princes Street come together. Dominating the intersection are the Royal Exchange and the Bank of England.

The Bank is a scene of almost constant bustle, both on the ground and below it. Traffic and pedestrians create a dither of noisy bewilderment in the streets, and converging underground railways bring together about 600 trains every day. So snarled is the traffic that it requires more than one "bobby" to unknot the entanglements.

* * *

Watchful Old Lady

The "Old Lady of Threadneedle Street," as the Bank of England is popularly called, recently had her face lifted. An addition has been made to the gray, windowless facade that looks out onto the street. What appears from outside to be the main building is really simply an exterior—a four-sided wall within which is the Bank proper.

Strict precaution against banditry is the rule here, and a strong guard is posted within and without, day and night. Each day a different password prevails; even the highest officials must pronounce it to get within the doors. This is justified by the fact that there are generally at least 160,000,000 pounds in gold and silver stored within the Bank's vaults.

Though usually thought of as a state institution, the Bank of England is in reality a private corporation, organized in 1694, and still carrying on the ordinary business of a bank while it operates as the authorized agency for printing, issuing, and cancellation of bank notes.

The Royal Exchange shows its right profile to the Old Lady. It is the third building to occupy this valuable triangular island. The first one, opened by Elizabeth in 1571, was demolished in the Fire of 1666; the second one also burned down, in 1838. Queen Victoria officially opened the present Exchange in 1844.

Home of the City's major civic affairs is the Guildhall, a venerable palace built in the 15th century, damaged by the Great Fire, and repaired afterwards. Here are held the elections of the Lord Mayor, the sheriffs, and the members of Parliament sitting for the City. Here, too, top-hatted gentry attend the traditional Lord Mayor's Banquet, every November 9.

The Lord Mayor's official home is the Mansion House. It is one of the buildings in "the Bank," facing the "Old Lady."

Pub

The "pub" (short for public house) is an English institution—their homely version of a saloon. This old girl has just left one—but didn't get very far.

Sandwich

Even in London the astrologer holds forth—and so does the sandwich man.

Wimbledon

Baron Gottfried von Cramm of Germany serves on the famous Wimbledon center court. This picture was taken during the 1936 Davis Cup interzone finals between Germany and Australia.

Spending a Quiet Sunday Out in the English Countryside

(1) J. B. Raymond, publisher of Cold Storage and Produce Review, pays toll before crossing a bridge. (2) A mother wheels her child out for an airing. (3) Roadside spring. (4) Boy's school.

SELLING AIR CONDITIONING

Buffalo Cabaret Operators Installing Cooling Systems to Beat Summer Slump

BUFFALO — Cabaret operators here are speeding plans to install air-conditioning equipment in preparation for the hot summer months which ordinarily decrease patronage in entertainment places not supplied with modern comfort-cooling equipment.

Nearly half of the 40 owners of cabarets and night clubs in the city are planning to install air-conditioning systems within the next month according to local air-conditioning dealers.

Bob White, proprietor of the Bob White Cabaret, installed a Kelvinator system in his building early last year, being the first operator in this city to air condition his place of business. Mr. White's cabaret was one of the six night clubs in Buffalo to remain open during the unusually hot summer months of last year.

"Last year was the first that I was able to run shows during the summer months," said Mr. White. "I was dubious about making the instalment at first because it represented quite an investment and I was afraid it wouldn't pay.

"I've never made a better investment, it has turned out, for although the equipment cost $4,300 it paid for itself in one summer," he continued.

"I've increased my business about 40%, had to place on an extra crew of waiters to take care of overflow crowds, and was one of the few cabarets running when the weather really got 'sticky.'

"The unit costs me approximately $2 a day to operate, but it spells thousands of dollars in receipts at the end of the year. Instead of laying off waiters, I had to hire more. It also enables me to maintain a dance orchestra and floor shows," Mr. White declared.

"Aside from the regular summer trade which air conditioning brings in, there are many other advantages. I capitalized on a particular one last summer.

"When we had an influenza epidemic here, the health commissioner issued warnings to people to stay away from crowds. Such warnings naturally hurt my business, so I remedied that by advertising that people needn't fear crowds in my cabaret because the air was conditioned and cleaned, and there was no chance for infection," said Mr. White.

"That brought the crowds in. The next day, several department stores equipped with air conditioning placed full-page ads in the papers to the same effect."

A survey of cabaret activities here last summer revealed that of the 40 in operation, 25 closed entirely during the hot months, five operated with improvised air-conditioning systems, and the remainder continued to stay open without using any sort of cooling equipment.

Of the 25 which closed, only 12 reopened in the fall and are still doing business.

Detroit Edison Co. Aids Dealers with Booklet

DETROIT—As an aid to dealers in selling summer air-conditioning equipment to business houses, Detroit Edison Co. is distributing to merchants two folders designed to show the dollars-and-cents value of equipment as demonstrated by installations already in operation.

First folder calls attention to the value of air conditioning as a business investment in increasing sales, customer and employe comfort, and reducing damages due to sweating and soiling of fabrics. Testimonials from several Detroit business houses, including Business News Publishing Co., are included.

Second folder, "The Facts About Air Conditioning for Business," gives examples of sales increases experienced by firms using summer-cooling equipment, compared with cost of the equipment, including depreciation, electricity, water, and maintenance.

Functions of an air-conditioning system in a business establishment are listed, and methods of obtaining summer cooling are outlined.

Services of the company are offered in assisting business houses to secure the type of equipment best suited to their needs. The utility company does not sell air-conditioning equipment.

Kelvin Home Draws 300 Inquiries a Week

DETROIT — More than 300 inquiries per week are received by Nash-Kelvinator Corp. from businessmen and professional leaders throughout the country, requesting information about residential air conditioning and the Kelvin Home, and Kelvinator kitchen and laundry equipment, declare officials.

Model Home Conditioned

ALBANY, N. Y. — The Albany Garage Co. will install Kelvinator air-conditioning equipment in a model home being constructed here by New York Power & Light Co.

Kelvinator Predicts 300% Increase in 'Package' Sales

DETROIT — Forecasting that "package" air-conditioning sales for 1937 will show a 300% increase over 1936, Kelvinator Division of Nash-Kelvinator Corp. recently launched a national campaign for room cooler promotion, including distributor meetings in 24 cities and advertising in newspapers and magazines.

Such equipment as room cooler units will make up 30% of the total air-conditioning business during the next four months, according to J. K. Knighton, sales manager of the commercial air-conditioning department.

Like refrigerators, says Mr. Knighton, the room cooler is essentially "package" merchandise, for installation is easy and convenient.

With the cooperation of two groups of company officials, headed by Mr. Knighton and H. M. McGaughey, assistant sales manager, promotion meetings will be sponsored by local division managers and their staffs in the following cities:

Atlanta, Birmingham, New Orleans, Charleston (S.C.), Shreveport, Dallas, Richmond, St. Louis, Baltimore, Kansas City, Philadelphia, New York City, Minneapolis, Providence, Chicago, Boston, Cincinnati, Albany, Huntington, Rochester, Cleveland, Oklahoma City, Charlotte, and Detroit.

Advertising of room coolers will stress summer comfort, convenience, and greater efficiency for office and home, according to present plans.

Air Conditioning Star Salesman for Denver Printing Company

DENVER — Air conditioning is proving to be a 'star salesman" for the Bradford-Robinson Printing Co., the printing firm's officials report.

To put prospects in the proper mood for signing on the dotted line, the printing company recently outfitted a new entertainment room for its customers and salesmen. Space was made on the third floor of the company's plant next the roof.

The location had the reputation of being an oven in summer and hard to heat in winter. To insure comfort and low sales resistance of prospects, an all-year air conditioner for the room was installed by York Ice Machinery Corp. under the direction of Chester Bell, local York manager.

Concealed within a specially constructed enclosure between the ceiling of the second story and the floor of the third, the conditioner is controlled by a starter at the foot of the stairs on the ground floor, with a "throw-over" switch from summer to winter operation in the new sales room. Operation otherwise is automatic.

Rustically furnished with panel walls, floor boards of various widths, bear rugs, and heavy furniture, the entertainment room is suited for such diverse contacts as those with business men, politicians, or high school annual boards. Bridge parties can be given, and a small kitchen enables the company to serve informal lunches.

N. Y. Utility Promotes Unit Air Conditioners

NEW YORK CITY—Consolidated Edison Co. is promoting the use of unit air conditioners for summer cooling of private offices through a series of advertisements in New York City newspapers.

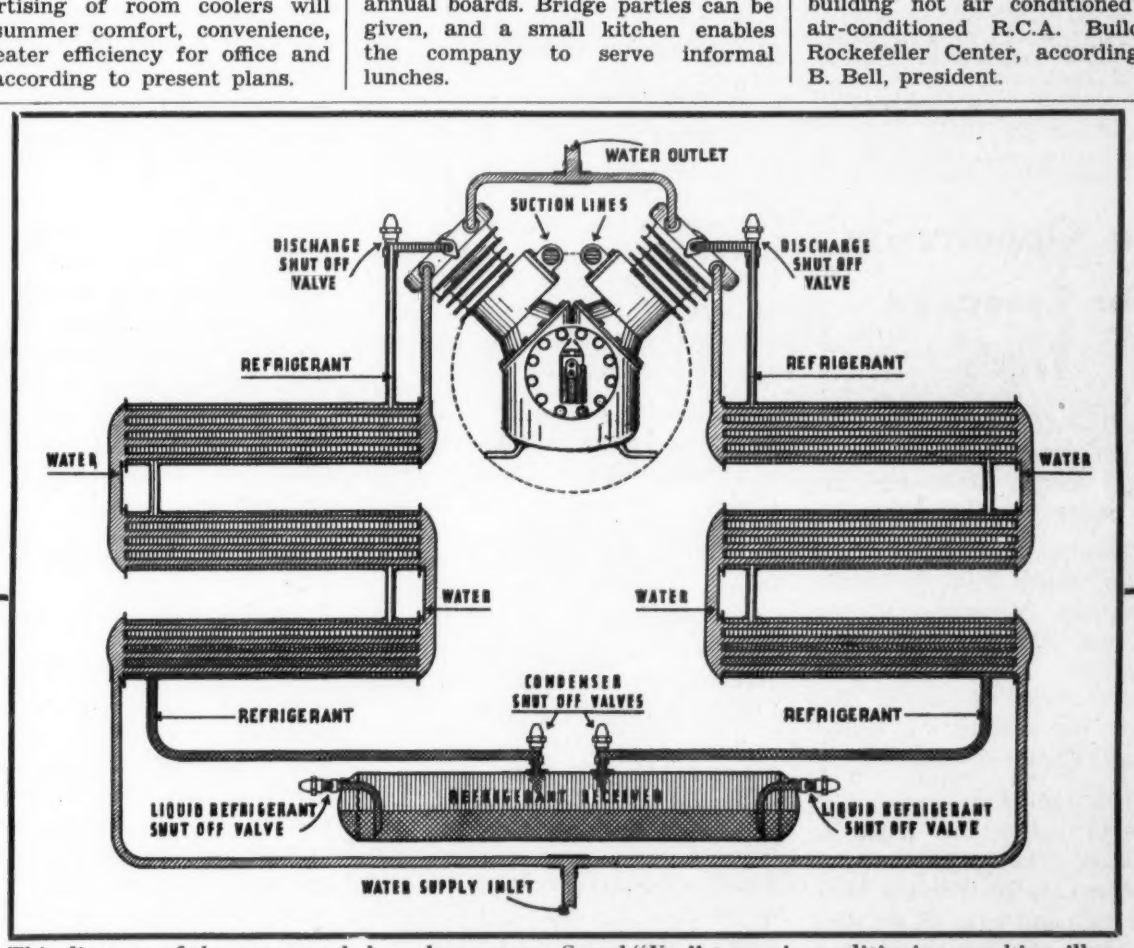
"This Summer, Have a Cool Office" runs the catch-line immediately below three pictures of a steaming executive who supposedly has been considering installing air conditioning for three years.

"Why slave in sticky misery through another hot and humid summer?" copy asks. "Why not have a cool, quiet office where work can be dispatched in comfort? Now, before the heat waves smother you. Now, before you get caught in the air-conditioning rush predicted for May and June."

The advertisement stresses the uses to which cabinet air conditioners may be put, and offers the services of its sales department in advising the type of equipment best suited to individual office needs. Consolidated Edison does no merchandising.

Air Conditioning Reduced Absence Due to Colds

NEW YORK CITY — Employe absence due to common colds has decreased materially among workers of American Cyanamid Co. since the company moved its offices from a building not air conditioned to the air-conditioned R.C.A. Building in Rockefeller Center, according to W. B. Bell, president.



This diagram of the water-cooled condenser on a Servel "Vee"-type air conditioning machine illustrates some of the unique construction features that assure economical operation.

What Will You Tell Air Conditioning Prospects When They Ask About

OPERATING COSTS?

"How much does it cost to operate?" . . . that's the first question asked by buyers of air conditioning equipment—and properly so!

If your air conditioning installations are built around Servel compressor units, you can tell your prospects a convincing story of unique design features that guarantee operating economy . . . day after day, year after year.

For instance . . . the exclusive *multiple-type* shell-and-tube condensers used on all Servel air conditioning machines of 5-ton to 20-ton capacity employ separate receivers and water-cooled compressor heads that reduce water consumption to a minimum, yet maintain the proper condensing temperatures for highest efficiency.

For regions where water supplies are limited, Servel's effective new evaporative condensers are also available.

Write today for complete details. Servel, Inc., Electric Refrigeration and Air Conditioning Division, Evansville, Indiana.

SERVEL

COMMERCIAL REFRIGERATION AND AIR CONDITIONING

CONDENSERS
DOMESTIC EVAPORATORS
COMMERCIAL EVAPORATORS
AIR CONDITIONING SURFACE

McCORD

REFRIGERATION AND AIR CONDITIONING *Products*

BLAST HEATING SURFACE
COMFORT COOLERS
MARKET COOLERS
UNIT HEATERS

CATALOGUES ON REQUEST

McCORD RADIATOR & MFG. CO.
DETROIT, MICHIGAN

Artic

REG. U. S. PAT. OFF.

(DU PONT METHYL CHLORIDE)

COAST-TO-COAST DISTRIBUTION—The standard Methyl Chloride. Stocked in standard and special 20-lb. containers for prompt delivery at 65 stock points in 46 cities; also Cuba, Mexico and Hawaiian Islands.

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E. I. DU PONT DE NEMOURS & CO., INC.
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AIR CONDITIONING AND REFRIGERATION NEWS

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New Opportunity For European Trade

AMERICA, to most of Europe, is the goose that lays golden eggs—and doesn't mind when you take them out of the nest.

For decades Europe has been extracting money from us—sometimes politely, sometimes angrily (when they think we have been "holding out" on them). And gratitude? It is to laugh. Far and wide we are known, collectively, as "Uncle Shylock."

Europeans sneer at our mannerisms, revile our habits, laugh at our culture. Our chief function, their actions would indicate, is to pay and pay and pay. If we send out any duns, we are sos-and-sos.

Two Drains on Income Before the War

Until the World War the extraction process went ahead under two guises: interest on capital, and support of relatives. European investments in American development paid huge dividends for years. And for half a century Europe sent its surplus population flooding through Ellis Island.

These immigrants lived on nickels, and sent their dollars back home. Probably no nation in the world would have tolerated such a draining of its income and wealth as has been permitted to the relatives-supporting aliens in the United States.

'Welching' and 'Nicking' Are Post-War Techniques

After the World War the extraction process took two new tacks: welching on debts, and nicking the tourists.

This latter outpouring of American money into needy and greedy European coffers comprised a far greater total than most people might imagine. Switzerland with its mountains, Italy with its art, and France with its two-price system (Americans being quoted the outrageous prices) absorbed millions of dollars from our tourists. Austria learned the trick; Germany and Spain began to advertise in our periodicals; and even England wasn't averse to cutting in on this easy money.

Losses on Both Government And Private Debts

As to the debt welching, that hasn't been confined to the war debts. Millions of dollars in private loans are probably lost to the United States forever. Germany borrowed enormously; sunk this American money into the ground (new housing, new factories, new roads, new recreational facilities); then demonstrated that she was practically bankrupt, and couldn't pay back the loans.

Working on our sympathies, she persuaded two commissions headed by our Messrs. Charles G. Dawes and Owen D. Young that in order to pay us her private debts, reparations would have to be reduced. They were, again and again. On the strength of that, she borrowed more money. This was used for a tremendous rearmament.

U. S. Paid for German Rehabilitation

Germany still can't repay her debts. But she worked us for the money to pay a large portion of her reparations, rehabilitate her country, modernize her factories (so that they can compete with us in world markets), and rearm so mightily that she has half the world scared half to death.

England and France have borrowed heavily from and through our banks, ostensibly because they needed the money to finance purchases of our goods. Is that what they did with the money? Hardly. They used it to invest in common stocks of our industrial corporations; so that today the foreign holdings in our industries are the largest in history.

Europe Sells Us Her Gold—at High Prices

England has sold us gold produced in her colonies in tremendous quantities, and at a tremendous profit. We have buried the gold in Kentucky; England has taken the money, used some of it to give our stocks a ride, and the rest to rearm.

Russia, which has no use for gold at all, is making plenty of hay by selling us gold from her rich mines at our extraordinary price of $35 an ounce. She uses the profits to build up industrial production facilities, which will some day be highly serious competition to our own.

Egypt and the Argentine have borrowed money from our bankers to finance greatly increased cotton plantings—so that they can supply the world market which we abandoned when our crop restriction program was initiated.

Monetary Restrictions Stop Debt Payments

Most European nations have set up monetary restrictions which virtually prohibit the payment of debts, in addition to impounding vast quantities of capital we have invested abroad. And, behind high tariff walls, they have copied our machines, employed the results of our research, and built machinery we formerly sold them.

No question about it, we have been pretty dumb. On his extensive world tour last year, the editor heard many foreign business men laugh at the United States, and our apparent eagerness to help them Share America's Wealth.

We Now Have Opportunity To Get Our Money Back

But all is not lost. Europe has been bilked by its own chicanery. And we have an opportunity to get some of our money back—if we keep our heads. Here's how, and why:

At present all of Europe is devoting the major portion of its energies to rearming. Factories have been completely turned over to the furtherance of frantically speeded-up armament programs. That's where we come in—we can supply both raw materials and fabricated products which they need but no longer have facilities available for making.

Fascist Dictatorships Start Rearmament

The two fascist dictatorships started it all. Hitler inaugurated his rearmament program to retrieve wounded German national pride, and to relieve a serious unemployment situation. Mussolini started his because he lives in Rome, where the wind-scarred fragments of Ionic columns still stand, forlornly but majestically, to remind him of the Caesars, and the Grandeur that was Rome.

Then the rest of Europe became frightened. They had to build airplanes and guns and ships and shells and gas masks, too. The more one nation makes, the more other nations have to make. It's a whirlpool which increases in speed steadily and giddily—and Europe is caught in it. Having used our borrowed capital to fight one war and start rearming for another, they can't stop.

American Mines, Farms, Factories Prospering

And so our junk dealers are prospering, collecting scrap iron which has been rusting away on our landscape. Our copper mines are booming. Our farmers are getting good prices and expanding markets. Our machine tool factories have far more orders than they can fill. And our manufacturers of power-driven specialties—those which come under the heading of "machinery"—have a grand opportunity to sell their products abroad.

For the next two or three years (or until the inevitable holocaust) America has an unparalleled chance to profit by supplying Europe with things she hasn't room or time to make right now.

Trade agreements which serve to lower the barriers to international commerce have been made with many nations, will be made with more.

Furthermore, the international exchange situation becomes less and less hectic and jittery with each passing month.

Johnson Act Protects American Capital

The Johnson Act prevents further borrowing on the part of defaulting European governments; and there are signs that private investors won't be such easy marks again. In other words, this time we should get paid.

We have been utter fools; but we don't need to be any longer. Now is the time to get some of it back.

LETTERS

Installation Data Now Issued in Booklet Form

Associated Publications
551 Fifth Ave., New York City

Sirs:

At the suggestion of John C. Gerstner of your New York office, we are writing you for a copy of the compilation Mr. Gerstner informed us you are preparing on air-conditioning installations in theaters throughout the United States.

We should like this information for an article we are preparing for an early issue and would appreciate your cooperation.

We publish a group of motion picture industry publications blanketing the entire country.

The data will, of course, be credited to the proper source.

A. L. FINESTONE,
Associate Editor.

Answer: We have been publishing all available data on the installation of air-conditioning systems in the issues of AIR CONDITIONING AND REFRIGERATION NEWS and we have now published an 84-page booklet containing the data which has been collected to date.

Australian Interest in Air Conditioning Mounts

United States
Department of Commerce
Bureau of Foreign and Domestic Commerce
14 Spring St., Sydney, Australia
April 17, 1937.

Publisher:

We are pleased to acknowledge your letter of Feb. 17 in which you described some features of AIR CONDITIONING AND REFRIGERATION NEWS and other publications issued by your company.

Your publications have for several years been very popular in our library where they are consulted frequently by people here interested in refrigeration and air conditioning. We hope that you will continue to favor us with these publications, as there is a growing interest in air conditioning in Australia.

We are regularly in touch with Mr. Hansen of F. C. Lovelock & Co., Sydney, who acts as your representative in Australia, accepting orders for your publications. From time to time people who see your publications in our library express an interest in subscribing to AIR CONDITIONING AND REFRIGERATION NEWS, or in buying one of your directories. These people are always referred to F. C. Lovelock & Co., an arrangement which we assume is quite satisfactory to you.

We take this opportunity to express our appreciation for your courtesy in making your publication available to this office. We shall continue to cooperate with F. C. Lovelock & Co. in promoting your interests here.

E. C. SQUIRE, American
Trade Commissioner in Charge.

Hutzler Bros. Is the A. M. C. Member Store

Associated Merchandising Corp.
Retail Research Association
1440 Broadway, New York City
May 18, 1937

Editor:

We note in the April 21 issue of AIR CONDITIONING AND REFRIGERATION NEWS, on Page 5 it is stated that O'Neill & Co. has dropped all refrigerator lines, including the A.M.C. brand line formerly handled.

The A.M.C. brand lines are carried only by the A.M.C. member stores shown on the margin of this letterhead. Hutzler Brothers Co. as you will note, is our Baltimore member store.

We would appreciate, therefore, you issuing a correction of this statement in your next issue.

MAE L. BROOKS

Rush!

Geo. S. Gularte Appliance Service
Wasco, Calif.

Sirs:

Please find enclosed check for one year's subscription to REFRIGERATION NEWS.

Please start this subscription with back issues, from February, 1937.

Also send me your RED BOOK.

I am lost without your NEWS.

Hoping that you may rush this subscription, I remain

GEO. S. GULARTE

I have just completed a course of training in refrigeration service and am starting into service work for myself.

Your magazine is sure interesting and should be read by all service men. —R. McRae Clark, Gaston, Ind.

University of Maryland Refrigeration Research

University of Maryland
Agricultural Experiment Station and College of Agriculture
College Park
May 10, 1937.

Publisher:

Receipt is acknowledged of your letter dated April 21, indicating your interest in our work on refrigeration, and also your willingness to cooperate by furnishing bound volumes of AIR CONDITIONING AND REFRIGERATION NEWS for use in our library. The bound volumes of back numbers of this magazine also were received in good condition a few days ago.

We are glad, of course, to have these back numbers of this magazine and will place them in our library for convenient reference. However, in preparing the abstracts of refrigeration information, we must necessarily confine our activities to the latest information so that back numbers of the magazine cannot be of as great assistance to us as current issues would be.

In undertaking this venture, I have approached quite a number of magazines and technical journals and almost without exception thus far we have received whole hearted exchange. Naturally, those who contribute current numbers of their publications to this work should receive something in return and we sincerely trust that the abstracts will prove of real value to them.

Inasmuch as you have indicated your interest and support for this work, I am placing your name on the list to receive the abstracts for the first year.

LAWRENCE H. JAMES,
Head of the Department.

Information Sought By New Zealanders

Chas. Begg & Co., Ltd. (Wholesale) Manufacturers' Agents and Importers
Manners St., Wellington, C 1, N.Z.

Sirs:

Will you please post to us at Wellington two copies of your MASTER SERVICE MANUAL by K. M. Newcum, your refrigeration library volume 3. We enclose a draft covering cost of same.

We are subscribers to your REFRIGERATION NEWS and find this journal an excellent publication and a great deal of interest to us. Last year in one of your issues you gave full particulars and specifications of the different brands of American refrigerators, but so far this has not appeared in this year's issue.

Will you kindly advise whether you are issuing a similar list this year, and if not, where we could obtain this information.

J. B. MAUNDER

Extremely Useful

E. I. du Pont de Nemours & Co.
National Ammonia Division
Philadelphia
May 13, 1937

Sirs:

We enclose herewith, your coupon covering a renewal of our subscription to the AIR CONDITIONING AND REFRIGERATION NEWS for one year. We also enclose our check in the sum of $4.00.

May we take this occasion to tell you that in our opinion you are publishing not only a very up-to-date trade journal, but you are also furnishing the refrigeration industry with extremely useful information. May we particularly express our interest in the articles by George F. Taubeneck covering his around-the-world trip.

H. L. BALLOU

West Indies Want Kerosene Refrigerator

Merritt & Critchley
Exposters and Importers
80 Broad St., New York City

F. M. Cockrell:

We are indebted to the Kelvinator Corp., Mr. Wurzbach, for your name and address with the information that you would be glad to help us.

We should like very much to have you send us the names and addresses of manufacturers of kerosene-operated refrigerators for shipment to British, French and Dutch West Indies.

We are exporters of general merchandise to the West Indies and of late we have received requests for kerosene-operated refrigerators.

MERRITT & CRITCHLEY

Statistics Appreciated

Vendrink Co.
215 W. Superior St., Chicago

Editor:

The writer has been an interested reader of your paper for the last 10 years. He considers it the outstanding publication in this field and finds the news and editorial matter as well as statistics of great interest and help.

As soon as your COMMERCIAL REFRIGERATION SERVICE MANUAL is published please send us a copy; also kindly extend our subscription for another year.

LESLIE ARNETT.

ONDITIONING NEWS

cts Animal itioning

Air conditioning means of which ease their profits, Dr. C. A. Mills, rimental medicine of Cincinnati.

Dr. Mills, "are as man to atmos- environment. Air rticularly needed bodies are poorly sudden changes, d heavily furred

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offices of Car- ved May 7 into itioned rooms on of Merchandise

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oduces Unit t Homes

automatic heat- tioning system and priced for o $7,000 bracket, he E. W. model, ed by Gar Wood he lowest priced y's history, ac- Dewey, general conditioning di-

l be sold as a cluding the air air to and from W. will provide ir filtering, hu- d warm air cir- nd air filtering summer.

mp Outlet ew Office

Colorado Condi- outor of Chrysler this area, will arters in a re- litioned store at and Broadway

Smith, manager, only air-condi- g showroom in

Tulsa Office Building Installs Air Control Stipulated in Lease

TULSA, Okla.—An air-conditioning system for the 15-story Thompson Bldg. here, which is occupied by a number of the larger oil companies, is now being completed by the local branch of Natkin & Co., Westinghouse Air-Conditioning distributor for several Mississippi Valley states, according to Bert Natkin, local manager.

The system is to condition the new 8th and 9th floor quarters of the E. H. Moore Co., owners and operators of the new Southern Oklahoma Pitts pool, who stipulated air conditioning upon signing a long term lease for their new quarters.

Since it was not considered advisable to locate the refrigerating equipment in the basement and extend either refrigerant or chilled water lines through all floors to so great a height, it was decided to make a separate self-contained air-conditioned unit of the 8th and 9th floors.

Therefore, the open stair wells were sealed off at these floors and a 20 x 25-ft. equipment room was partitioned off on the eighth floor for housing the air-conditioning equipment. This room was heavily insulated to prevent escape of equipment noise.

In this room are located the supply fan (New York Blower Co.), direct-expansion type cooling and dehumidifying coils, outside air tempering coils for winter ventilating use, and the Westinghouse refrigerating equipment consisting of two 25-hp. sealless compressors with evaporative condensers.

Supply ducts are installed above new suspended ceilings which were installed in the corridors for the purpose of concealing ducts. Air is supplied through high "Uniflo" directional type grilles, and returned to the corridors which serve as recirculating chambers or ducts for returning a proportion of the air to the air-conditioning equipment. Both outside and recirculated air is filtered.

Similar air conditioning is contemplated for the future, arranged in similar independent two-floor units, so that approximately 14,000 sq. ft. of floor space will be served by each unit.

With this arrangement, it is felt that maximum flexibility of control will be obtained with minimum cutting of building construction, use of rentable space, and passage of ducts and piping throughout the building.

Superior Automatic Heating Co. Moves Headquarters

FT. WAYNE, Ind.—Superior Automatic Heating Co. has moved to the Hotel Indiana Building, 1111 S. Harrison St., reports C. P. Meyer, president. Mr. Meyer also states that Indiana Tempered Air, Inc., which he organized with A. M. and W. J. Poinsatte, will operate in Indianapolis.

New Jamaica Theater To Be Air Conditioned

KINGSTON, Jamaica—A 100-ton Carrier air-conditioning system has been ordered by Cinema Co. of Jamaica, Ltd., to be installed in its 1,500-seat Carib Theater under construction here.

Cost of conditioning the theater, said to be the largest on the island, has been estimated at $25,000 to $30,000. The order was obtained by John F. Des Reis, Carrier field manager in the Caribbean and West Indian territory.

Carrier Corp. is sending a specially trained engineer to handle the installation and to solve the special problem caused by tropical climatic conditions.

A 15-ton Carrier system has been installed to condition the 20 offices of Shell Oil Co. in Breezy Castle, Kingston suburb.

Butterfield Joins Gar Wood Conditioning Sales Staff

DETROIT—Charles A. Butterfield, formerly sales engineer of R. L. Spitzley Heating Co., Delco distributor in this territory, has been added to the sales staff of the air-conditioning division of Gar Wood Industries, Inc., according to Norman Saylor, branch manager.

Mr. Butterfield also has been connected with General Electric's air-conditioning department, and has been Chicago and Detroit representative for Hess Warming & Ventilating Co.

Portland Puppy Laundry Now Air Conditioned

PORTLAND, Ore.—An air-conditioned puppy laundry has been installed by Dr. C. T. Norman, owner of the Hollywood Dog and Cat Hospital here.

Equipment consists of a new dog-drying cabinet, in which a "wet washed" puppy can be air conditioned and dried in 15 minutes, while undergoing a beauty treatment in the form of special light and heat rays.

In the system, heated air is pumped into a special drying cabinet from a new electro-gas furnace serving the entire building, and having a capacity of 2,000 c.f.m. The cabinet was designed by Dr. Norman from long experience in the handling of pets.

Installation of the equipment was made by the Lynch Furnace Co. of Portland.

Fedders Equipment to Cool Hollywood Drug Store

HOLLYWOOD, Calif. — Fedders air-conditioning equipment, consisting of a 30-ton coil, model "33" high-capacity thermostatic expansion valves, and a shell-and-tube type dual condensing unit, provides comfort cooling for both drug department and restaurant of Thrifty Drug Co.

Installation was made by Caraban Engineering Co., of Los Angeles. Coils, valves, and condensing unit were purchased through Franklin G. Slagel Co., Los Angeles, Fedders west coast representative.

Mercoid Announces Personnel Changes

CHICAGO — The Mercoid Corp., manufacturer of automatic controls for the heating, air-conditioning, and refrigeration industries, recently announced a number of personnel appointments.

R. M. Keatts and J. F. McCauley, who recently completed the factory training course, have been transferred to the company's sales department. Mr. Keatts will work out of the Cincinnati office, and Mr. McCauley will be stationed in the Cleveland sales territory.

William Ufer and Walter Lischett have been transferred from the company's service division to the sales department in the central offices here.

J. F. Chambliss, formerly with Edwin F. Gore & Co., Chicago, has been appointed auditor of the company.

Servel Lists Water-Cooled Equipment in New Catalog

EVANSVILLE, Ind.—The electric refrigeration and air-conditioning division of Servel, Inc., has just issued a catalog listing and describing its 1937 line of water-cooled air-conditioning machines.

Units ranging in capacity from ½ to 20 hp. are described in the catalog, which also lists specifications of the company's evaporative condensers, and dimensional data on both the condensers and machine units.

Light, Flexible, Corkboard

ENDS CONDENSATION ON COLD AIR DUCTS

Armstrong's DI Corkboard effectively protects light duty conditioned air ducts

WHERE inside ducts carry large quantities of cool air, the problem of condensation is frequently encountered. An effective method of preventing this condensation is provided by the new Armstrong's DI Corkboard.

DI Corkboard is a light, flexible material. It is furnished in sheets 12" x 36" x ½", coated on one face with an asphalt finish ironed on at the factory. This asphalt coating is a protection against moisture and also adds strength to the insulation. DI Corkboard is easily cut and shaped with a sharp knife, and conforms readily to curved surfaces. Because of its light weight, this new type corkboard is usually cemented in place with adhesives alone. Either Armstrong's Waterproof Cement or Erection Asphalt may be used. When additional fastening is desired, bands or wires may be used. Any standard insulation finish for interior work may be applied over this corkboard.

BOTH PICTURES SHOW *how Armstrong's DI Corkboard was used to prevent condensation on ducts in the basement of the Lafayette Building, Philadelphia. Installation by John R. Livezey. Note how readily this flexible corkboard conforms to the curved surfaces of these ducts.*

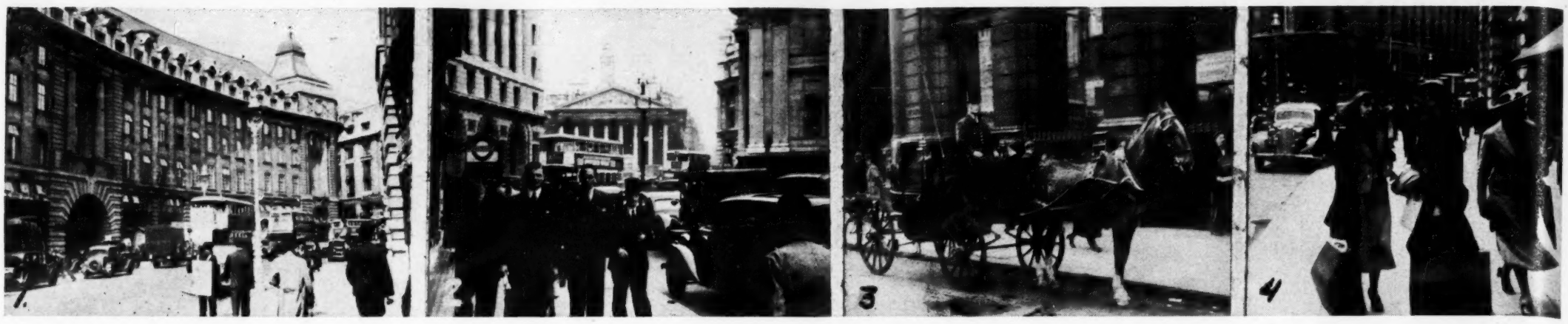
Use Standard Corkboard and Cork Covering to Guard Refrigeration

While Armstrong's DI Corkboard serves effectively to prevent condensation, Armstrong's Standard Corkboard should be used for lower temperatures and to conserve refrigeration. Together with Armstrong's Cork Covering, this efficient insulation guards against refrigeration loss, gives many years of service.

Armstrong engineers will gladly help you plan insulation for ducts and cold lines. For complete information about, and samples of, any Armstrong Insulation material, address Armstrong Cork Products Co., Building Materials Div., 1002 Concord St., Lancaster, Pa.

Armstrong's **DI CORKBOARD**

Downtown London Has Its Individual Character; Yet It Could Be New York



(1) Regent Street, just off Piccadilly Circus, has its double-decker buses. (2) In the financial district—note top-hatted gentleman in center. (3) London cabbie. (4) Two English misses discuss shopping.

(*Concluded from Page 10, Column 5*)

of That. H. M. the VIII, H.R.H. Inperson. E. Phillips Oppenheim. H. G. Wells. Baron Upwell. Count de Change.

Eventually an emaciated person in a black cutway and a wing collar approaches, gingerly, and from a safe distance inquires the nature and purpose of this obviously unexpected and possibly distasteful visit.

You reply, not affronted because the spell is on you, that you want a hat.

"Ah, yes. And, ah, may we inquire to whom we are indebted for the suggestion that you come here?

You offer him the card, with the address that your friend has given you. He takes it, still gingerly.

After it has been scrutinized carefully and deliberately, it apparently passes muster.

"And, ah, for what occasions do you wish to wear this hat?

You gulp, feeling a bit ashamed at the knowledge that you haven't been invited to a garden party or something else which might require a gray topper, and reply:

"For business and street wear."

The eyebrows raise above the rimless noseglasses, as only an Englishman can raise them.

"Indeed?" frostily. "And the size?"

"Seven and one-quarter." you answer, shifting to the other foot.

He looks at you coldly for a long moment, sizing you up from head to foot, in the manner of a street-corner-Johnny appraising a passing female.

Eventually he moves in measured tread over to the dusty hat gallery along the wall. Without hesitation he selects a navy blue smooth felt, with unfinished brim, and hands it to you.

You try it on in front of an old, one-way mirror. It *does* seem rather "right."

But you decide that surely you should see another model or two, just for comparison.

Diffidently you vocalize this desire.

The clerk takes off his noseglasses, polishes them, and replies, coldly:

"If the gentleman is not satisfied, there are a number of shops down on Bond Street which, I am sure, have a large selection."

As he starts to turn away, you say:

"I'll take it."

You pay two pounds, put on the hat, and walk out, feeling that you have Walked With Kings . . . and lost the common Touch.

It is gray and chilly outdoors, and soon, of course, it will rain.

* * *

London, England

For the benefit of Clem Clatfeltor down there in London, Ark., which town has a population of 355 and is perched on the Arkansas River three counties east of Van Buren, may we say that there are several other towns throughout the world bearing the same name as his native village, not the least noteworthy of which is London, England.

This other London is somewhat larger than the one in the Ozark State, its population being in the neighborhood of 8,300,000. It is also quite a bit older, having been used as headquarters by the legions of Caesar back in the B.C. years.

Britain's capital covers a large chunk of the southeast part of England, spreading far back from both banks of the River Thames into six counties, Middlesex, Essex, Kent, Surrey, London, and Hertfordshire. In all, London has an area of about 700 square miles.

It really isn't a city at all, being more a motley collection of towns and districts which have been loosely joined together as the centuries have passed, so that today they form a congealed mass of streets, buildings, parks, and people.

The original City of London is a tiny community huddled close to the great dome of St. Paul's Cathedral. Its extent is only 678 acres. Yet, despite its small size, this original city is the heart of the British Empire's business and financial life, and of the kingdom's discreet but powerful daily press.

Greater London, however, is a monster. Taking Charing Cross as its center, London spreads out for as much as 15 miles in every direction. Greedily it has crept over such erstwhile country towns and villages as Chislehurst (no doubt the home of many appliance dealers), Harrow on the Hill, Croydon, Edgware, Kew, Wimbledon, Woolwich, Greenwich, Chiswick, Sydenham, Tottenham, Putney, Willesden, and Streatham. These are all now part of the metropolis.

And yet London's voracious appetite is not appeased; its "octopusian" activities have not abated. Right now London is in the midst of the greatest building and expansion boom in its history.

Slums and crowded areas are being cleared to make way for the establishment of factories, the construction of new homes, the laying-out of streets, and for other developments. Vacant territory in the city is at a premium. The London County Council has to grit its teeth and hang on to the parks and playgrounds it maintains for its wards, the citizens.

To house the families ousted from the destroyed slums, 600,000 new homes and a great many flats have been constructed in recent years, most of them in the roomier suburbs.

Other new suburbs have been popping up like mushrooms all over the outer edges of the city. A good many of them were created as dormitories for the thousands of workers (and their families) employed in the new factories in outlying districts.

* * *

New Industrial Center

England's industrial center is rapidly shifting from the North—which was hard hit by the depression, and is showing little sign of regaining its lost strength—to London.

London already was England's greatest shipping center, business center, social center, cultural center, historical center; and now it is the industrial center, too.

With this expansion, London is eating up more and more of the territory in the counties in which it is situated. Middlesex, it is expected, will be completely absorbed in the city before the next half century is gone. Southward into Surrey marches the city. Little towns in Kent, Essex, and Herts are being gobbled up as the metropolis reaches out along the main highways radiating into the countryside.

The population of London, even now an almost astronomical figure, is increasing at the rate of about 15,000 per year.

Outer London, however, is not especially romantic. It is Old London that will attract you. The City, Westminster, Chelsea, the Pool—these are the spots to see.

Let's begin with the City. Immediately familiar names come to the tongue. St. Paul's, Fleet Street, Threadneedle Street, the Bank, the Guildhall, Cheapside, London Bridge, Ludgate Hill, Tower Hill, and the Tower itself.

With the possible exception of New York's Times Square, the most famous corner in the world is the Bank, where Cheapside, Threadneedle Street, Cornhill, and Princes Street come together. Dominating the intersection are the Royal Exchange and the Bank of England.

The Bank is a scene of almost constant bustle, both on the ground and below it. Traffic and pedestrians create a dither of noisy bewilderment in the streets, and converging underground railways bring together about 600 trains every day. So snarled is the traffic that it requires more than one "bobby" to unknot the entanglements.

* * *

Watchful Old Lady

The "Old Lady of Threadneedle Street," as the Bank of England is popularly called, recently had her face lifted. An addition has been made to the gray, windowless facade that looks out onto the street. What appears from outside to be the main building is really simply an exterior—a four-sided wall within which is the Bank proper.

Strict precaution against banditry is the rule here, and a strong guard is posted within and without, day and night. Each day a different password prevails; even the highest officials must pronounce it to get within the doors. This is justified by the fact that there are generally at least 160,000,000 pounds in gold and silver stored within the Bank's vaults.

Though usually thought of as a state institution, the Bank of England is in reality a private corporation, organized in 1694, and still carrying on the ordinary business of a bank while it operates as the authorized agency for printing, issuing, and cancellation of bank notes.

The Royal Exchange shows its right profile to the Old Lady. It is the third building to occupy this valuable triangular island. The first one, opened by Elizabeth in 1571, was demolished in the Fire of 1666; the second one also burned down, in 1838. Queen Victoria officially opened the present Exchange in 1844.

Home of the City's major civic affairs is the Guildhall, a venerable palace built in the 15th century, damaged by the Great Fire, and repaired afterwards. Here are held the elections of the Lord Mayor, the sheriffs, and the members of Parliament sitting for the City. Here, too, top-hatted gentry attend the traditional Lord Mayor's Banquet, every November 9.

The Lord Mayor's official home is the Mansion House. It is one of the buildings in "the Bank," facing the "Old Lady."

Sandwich

Even in London the astrologer holds forth—and so does the sandwich man.

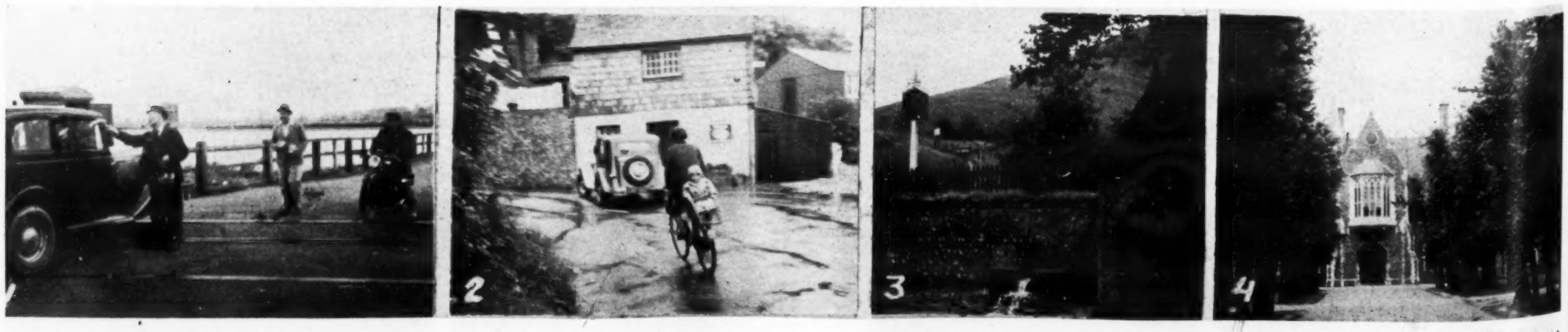
Pub

The "pub" (short for public house) is an English institution—their homely version of a saloon. This old girl has just left one—but didn't get very far.

Wimbledon

Baron Gottfried von Cramm of Germany serves on the famous Wimbledon center court. This picture was taken during the 1936 Davis Cup interzone finals between Germany and Australia.

Spending a Quiet Sunday Out in the English Countryside



(1) J. B. Raymond, publisher of Cold Storage and Produce Review, pays toll before crossing a bridge. (2) A mother wheels her child out for an airing. (3) Roadside spring. (4) Boy's school.

SELLING AIR CONDITIONING

Buffalo Cabaret Operators Installing Cooling Systems to Beat Summer Slump

BUFFALO — Cabaret operators here are speeding plans to install air-conditioning equipment in preparation for the hot summer months which ordinarily decrease patronage in entertainment places not supplied with modern comfort-cooling equipment.

Nearly half of the 40 owners of cabarets and night clubs in the city are planning to install air-conditioning systems within the next month according to local air-conditioning dealers.

Bob White, proprietor of the Bob White Cabaret, installed a Kelvinator system in his building early last year, being the first operator in this city to air condition his place of business. Mr. White's cabaret was one of the six night clubs in Buffalo to remain open during the unusually hot summer months of last year.

"Last year was the first that I was able to run shows during the summer months," said Mr. White. "I was dubious about making the instalment at first because it represented quite an investment and I was afraid it wouldn't pay.

"I've never made a better investment, it has turned out, for although the equipment cost $4,300 it paid for itself in one summer," he continued.

"I've increased my business about 40%, had to place on an extra crew of waiters to take care of overflow crowds, and was one of the few cabarets running when the weather really got 'sticky.'

"The unit costs me approximately $2 a day to operate, but it spells thousands of dollars in receipts at the end of the year. Instead of laying off waiters, I had to hire more. It also enables me to maintain a dance orchestra and floor shows," Mr. White declared.

"Aside from the regular summer trade which air conditioning brings in, there are many other advantages. I capitalized on a particular one last summer.

"When we had an influenza epidemic here, the health commissioner issued warnings to people to stay away from crowds. Such warnings naturally hurt my business, so I remedied that by advertising that people needn't fear crowds in my cabaret because the air was conditioned and cleaned, and there was no chance for infection," said Mr. White.

"That brought the crowds in. The next day, several department stores equipped with air conditioning placed full-page ads in the papers to the same effect."

A survey of cabaret activities here last summer revealed that of the 40 in operation, 25 closed entirely during the hot months, five operated with improvised air-conditioning systems, and the remainder continued to stay open without using any sort of cooling equipment.

Of the 25 which closed, only 12 reopened in the fall and are still doing business.

Detroit Edison Co. Aids Dealers with Booklet

DETROIT—As an aid to dealers in selling summer air-conditioning equipment to business houses, Detroit Edison Co. is distributing to merchants two folders designed to show the dollars-and-cents value of equipment as demonstrated by installations already in operation.

First folder calls attention to the value of air conditioning as a business investment in increasing sales, customer and employe comfort, and reducing damages due to sweating and soiling of fabrics. Testimonials from several Detroit business houses, including Business News Publishing Co., are included.

Second folder, "The Facts About Air Conditioning for Business," gives examples of sales increases experienced by firms using summer-cooling equipment, compared with cost of the equipment, including depreciation, electricity, water, and maintenance.

Functions of an air-conditioning system in a business establishment are listed, and methods of obtaining summer cooling are outlined.

Services of the company are offered in assisting business houses to secure the type of equipment best suited to their needs. The utility company does not sell air-conditioning equipment.

Kelvin Home Draws 300 Inquiries a Week

DETROIT — More than 300 inquiries per week are received by Nash-Kelvinator Corp. from businessmen and professional leaders throughout the country, requesting information about residential air conditioning and the Kelvin Home, and Kelvinator kitchen and laundry equipment, declare officials.

Model Home Conditioned

ALBANY, N. Y. — The Albany Garage Co. will install Kelvinator air-conditioning equipment in a model home being constructed here by New York Power & Light Co.

Kelvinator Predicts 300% Increase in 'Package' Sales

DETROIT — Forecasting that "package" air-conditioning sales for 1937 will show a 300% increase over 1936, Kelvinator Division of Nash-Kelvinator Corp. recently launched a national campaign for room cooler promotion, including distributor meetings in 24 cities and advertising in newspapers and magazines.

Such equipment as room cooler units will make up 30% of the total air-conditioning business during the next four months, according to J. K. Knighton, sales manager of the commercial air-conditioning department.

Like refrigerators, says Mr. Knighton, the room cooler is essentially "package" merchandise, for installation is easy and convenient.

With the cooperation of two groups of company officials, headed by Mr. Knighton and H. M. McGaughey, assistant sales manager, promotion meetings will be sponsored by local division managers and their staffs in the following cities:

Atlanta, Birmingham, New Orleans, Charleston (S.C.), Shreveport, Dallas, Richmond, St. Louis, Baltimore, Kansas City, Philadelphia, New York City, Minneapolis, Providence, Chicago, Boston, Cincinnati, Albany, Huntington, Rochester, Cleveland, Oklahoma City, Charlotte, and Detroit.

Advertising of room coolers will stress summer comfort, convenience, and greater efficiency for office and home, according to present plans.

Air Conditioning Star Salesman for Denver Printing Company

DENVER — Air conditioning is proving to be a 'star salesman" for the Bradford-Robinson Printing Co., the printing firm's officials report.

To put prospects in the proper mood for signing on the dotted line, the printing company recently outfitted a new entertainment room for its customers and salesmen. Space was made on the third floor of the company's plant next the roof.

The location had the reputation of being an oven in summer and hard to heat in winter. To insure comfort and low sales resistance of prospects, an all-year air conditioner for the room was installed by York Ice Machinery Corp. under the direction of Chester Bell, local York manager.

Concealed within a specially constructed enclosure between the ceiling of the second story and the floor of the third, the conditioner is controlled by a starter at the foot of the stairs on the ground floor, with a "throw-over" switch from summer to winter operation in the new sales room. Operation otherwise is automatic.

Rustically furnished with panel walls, floor boards of various widths, bear rugs, and heavy furniture, the entertainment room is suited for such diverse contacts as those with business men, politicians, or high school annual boards. Bridge parties can be given, and a small kitchen enables the company to serve informal lunches.

N. Y. Utility Promotes Unit Air Conditioners

NEW YORK CITY—Consolidated Edison Co. is promoting the use of unit air conditioners for summer cooling of private offices through a series of advertisements in New York City newspapers.

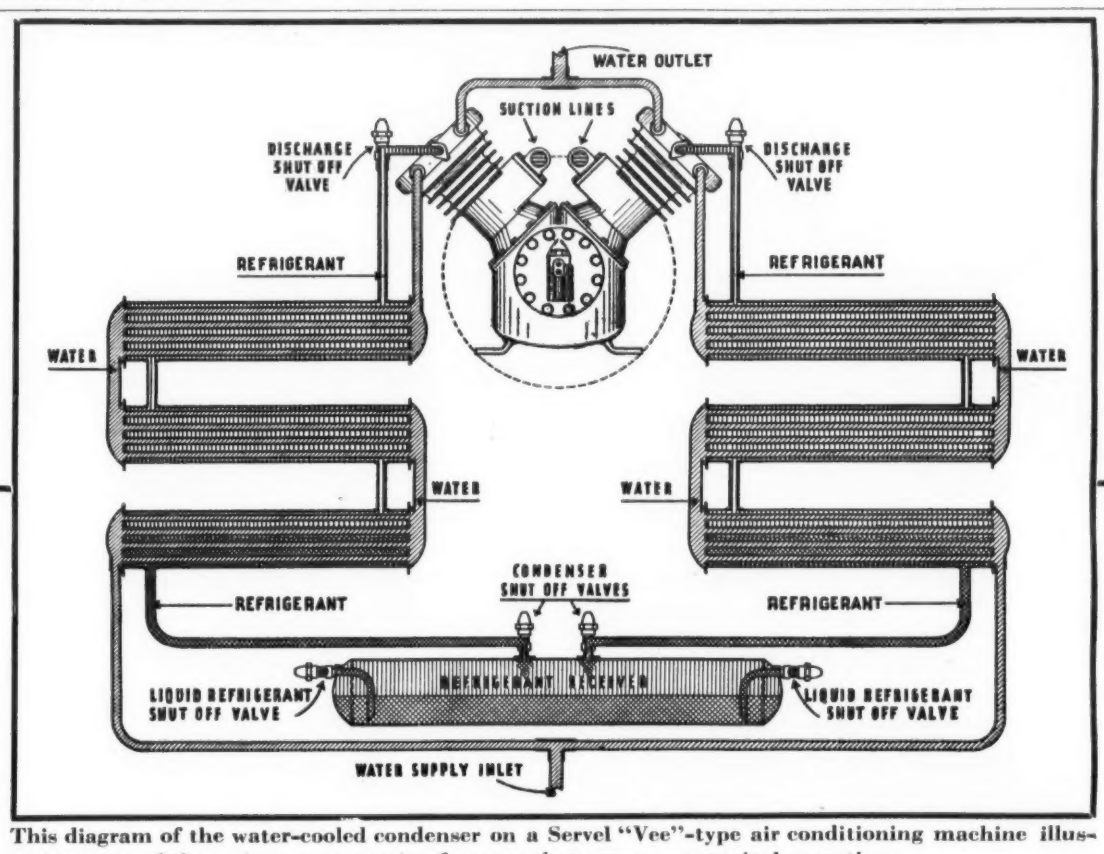
"This Summer, Have a Cool Office" runs the catch-line immediately below three pictures of a steaming executive who supposedly has been considering installing air conditioning for three years.

"Why slave in sticky misery through another hot and humid summer?" copy asks. "Why not have a cool, quiet office where work can be dispatched in comfort? Now, before the heat waves smother you. Now, before you get caught in the air-conditioning rush predicted for May and June."

The advertisement stresses the uses to which cabinet air conditioners may be put, and offers the services of its sales department in advising the type of equipment best suited to individual office needs. Consolidated Edison does no merchandising.

Air Conditioning Reduced Absence Due to Colds

NEW YORK CITY — Employe absence due to common colds has decreased materially among workers of American Cyanamid Co. since the company moved its offices from a building not air conditioned to the air-conditioned R.C.A. Building in Rockefeller Center, according to W. B. Bell, president.



This diagram of the water-cooled condenser on a Servel "Vee"-type air conditioning machine illustrates some of the unique construction features that assure economical operation.

What Will You Tell Air Conditioning Prospects When They Ask About

OPERATING COSTS?

"How much does it cost to operate?" . . . that's the first question asked by buyers of air conditioning equipment—and properly so!

If your air conditioning installations are built around Servel compressor units, you can tell your prospects a convincing story of unique design features that guarantee operating economy . . . day after day, year after year.

For instance . . . the exclusive *multiple-type* shell-and-tube condensers used on all Servel air conditioning machines of 5-ton to 20-ton capacity employ separate receivers and water-cooled compressor heads that reduce water consumption to a minimum, yet maintain the proper condensing temperatures for highest efficiency.

For regions where water supplies are limited, Servel's effective new evaporative condensers are also available.

Write today for complete details. Servel, Inc., Electric Refrigeration and Air Conditioning Division, Evansville, Indiana.

SERVEL

COMMERCIAL REFRIGERATION AND AIR CONDITIONING

CONDENSERS
DOMESTIC EVAPORATORS
COMMERCIAL EVAPORATORS
AIR CONDITIONING SURFACE

McCORD

REFRIGERATION AND AIR CONDITIONING *Products*

BLAST HEATING SURFACE
COMFORT COOLERS
MARKET COOLERS
UNIT HEATERS

CATALOGUES ON REQUEST

McCORD RADIATOR & MFG. CO.
DETROIT, MICHIGAN

Artic

REG. U. S. PAT. OFF.

(DU PONT METHYL CHLORIDE)

COAST-TO-COAST DISTRIBUTION—The standard Methyl Chloride. Stocked in standard and special 20-lb. containers for prompt delivery at 65 stock points in 46 cities; also Cuba, Mexico and Hawaiian Islands.

AT YOUR FINGER TIPS

DU PONT
REG. U. S. PAT. OFF.

THE R. & H. CHEMICALS DEPARTMENT
E. I. DU PONT DE NEMOURS & CO., INC.
WILMINGTON . DELAWARE

Write for free copies of "ARTIC Service News" containing list of authorized distributors and stocking points, and current information about refrigeration.

AIR CONDITIONING AND REFRIGERATION NEWS

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Departmental Editors:
K. M. NEWCUM, *Refrigeration Service*
F. O. JORDAN, *Air Conditioning*
Staff Reporters:
WILLIAM H. LONG, ALFRED JONES, JAMES MCCALLUM, and R. H. POTTER

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Advertising Representatives:
John B. Gallagher Co., Inc.,
11 W. 42nd St., New York, N. Y.
Pennsylvania 6-1380
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612 N. Michigan Ave., Chicago, Ill.
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New Opportunity For European Trade

AMERICA, to most of Europe, is the goose that lays golden eggs—and doesn't mind when you take them out of the nest.

For decades Europe has been extracting money from us—sometimes politely, sometimes angrily (when they think we have been "holding out" on them). And gratitude? It is to laugh. Far and wide we are known, collectively, as "Uncle Shylock."

Europeans sneer at our mannerisms, revile our habits, laugh at our culture. Our chief function, their actions would indicate, is to pay and pay and pay. If we send out any duns, we are sos-and-sos.

Two Drains on Income Before the War

Until the World War the extraction process went ahead under two guises: interest on capital, and support of relatives. European investments in American development paid huge dividends for years. And for half a century Europe sent its surplus population flooding through Ellis Island.

These immigrants lived on nickels, and sent their dollars back home. Probably no nation in the world would have tolerated such a draining of its income and wealth as has been permitted to the relatives-supporting aliens in the United States.

'Welching' and 'Nicking' Are Post-War Techniques

After the World War the extraction process took two new tacks: welching on debts, and nicking the tourists.

This latter outpouring of American money into needy and greedy European coffers comprised a far greater total than most people might imagine. Switzerland with its mountains, Italy with its art, and France with its two-price system (Americans being quoted the outrageous prices) absorbed millions of dollars from our tourists. Austria learned the trick; Germany and Spain began to advertise in our periodicals; and even England wasn't averse to cutting in on this easy money.

Losses on Both Government And Private Debts

As to the debt welching, that hasn't been confined to the war debts. Millions of dollars in private loans are probably lost to the United States forever. Germany borrowed enormously; sunk this American money into the ground (new housing, new factories, new roads, new recreational facilities); then demonstrated that she was practically bankrupt, and couldn't pay back the loans.

Working on our sympathies, she persuaded two commissions headed by our Messrs. Charles G. Dawes and Owen D. Young that in order to pay us her private debts, reparations would have to be reduced. They were, again and again. On the strength of that, she borrowed more money. This was used for a tremendous rearmament.

U. S. Paid for German Rehabilitation

Germany still can't repay her debts. But she worked us for the money to pay a large portion of her reparations, rehabilitate her country, modernize her factories (so that they can compete with us in world markets), and rearm so mightily that she has half the world scared half to death.

England and France have borrowed heavily from and through our banks, ostensibly because they needed the money to finance purchases of our goods. Is that what they did with the money? Hardly. They used it to invest in common stocks of our industrial corporations; so that today the foreign holdings in our industries are the largest in history.

Europe Sells Us Her Gold—at High Prices

England has sold us gold produced in her colonies in tremendous quantities, and at a tremendous profit. We have buried the gold in Kentucky; England has taken the money, used some of it to give our stocks a ride, and the rest to rearm.

Russia, which has no use for gold at all, is making plenty of hay by selling us gold from her rich mines at our extraordinary price of $35 an ounce. She uses the profits to build up industrial production facilities, which will some day be highly serious competition to our own.

Egypt and the Argentine have borrowed money from our bankers to finance greatly increased cotton plantings—so that they can supply the world market which we abandoned when our crop restriction program was initiated.

Monetary Restrictions Stop Debt Payments

Most European nations have set up monetary restrictions which virtually prohibit the payment of debts, in addition to impounding vast quantities of capital we have invested abroad. And, behind high tariff walls, they have copied our machines, employed the results of our research, and built machinery we formerly sold them.

No question about it, we have been pretty dumb. On his extensive world tour last year, the editor heard many foreign business men laugh at the United States, and our apparent eagerness to help them Share America's Wealth.

We Now Have Opportunity To Get Our Money Back

But all is not lost. Europe has been bilked by its own chicanery. And we have an opportunity to get some of our money back—if we keep our heads. Here's how, and why:

At present all of Europe is devoting the major portion of its energies to rearming. Factories have been completely turned over to the furtherance of frantically speeded-up armament programs. That's where we come in—we can supply both raw materials and fabricated products which they need but no longer have facilities available for making.

Fascist Dictatorships Start Rearmament

The two fascist dictatorships started it all. Hitler inaugurated his rearmament program to retrieve wounded German national pride, and to relieve a serious unemployment situation. Mussolini started his because he lives in Rome, where the wind-scarred fragments of Ionic columns still stand, forlornly but majestically, to remind him of the Caesars, and the Grandeur that was Rome.

Then the rest of Europe became frightened. They had to build airplanes and guns and ships and shells and gas masks, too. The more one nation makes, the more other nations have to make. It's a whirlpool which increases in speed steadily and giddily—and Europe is caught in it. Having used our borrowed capital to fight one war and start rearming for another, they can't stop.

American Mines, Farms, Factories Prospering

And so our junk dealers are prospering, collecting scrap iron which has been rusting away on our landscape. Our copper mines are booming. Our farmers are getting good prices and expanding markets. Our machine tool factories have far more orders than they can fill. And our manufacturers of power-driven specialties—those which come under the heading of "machinery"—have a grand opportunity to sell their products abroad.

For the next two or three years (or until the inevitable holocaust) America has an unparalleled chance to profit by supplying Europe with things she hasn't room or time to make right now.

Trade agreements which serve to lower the barriers to international commerce have been made with many nations, will be made with more.

Furthermore, the international exchange situation becomes less and less hectic and jittery with each passing month.

Johnson Act Protects American Capital

The Johnson Act prevents further borrowing on the part of defaulting European governments; and there are signs that private investors won't be such easy marks again. In other words, this time we should get paid.

We have been utter fools; but we don't need to be any longer. Now is the time to get some of it back.

LETTERS

Installation Data Now Issued in Booklet Form

Associated Publications
551 Fifth Ave., New York City

Sirs:

At the suggestion of John C. Gerstner of your New York office, we are writing you for a copy of the compilation Mr. Gerstner informed us you are preparing on air-conditioning installations in theaters throughout the United States.

We should like this information for an article we are preparing for an early issue and would appreciate your cooperation.

We publish a group of motion picture industry publications blanketing the entire country.

The data will, of course, be credited to the proper source.

A. L. FINESTONE,
Associate Editor.

Answer: We have been publishing all available data on the installation of air-conditioning systems in the issues of AIR CONDITIONING AND REFRIGERATION NEWS and we have now published an 84-page booklet containing the data which has been collected to date.

Australian Interest in Air Conditioning Mounts

United States
Department of Commerce
Bureau of Foreign and Domestic Commerce
14 Spring St., Sydney, Australia
April 17, 1937.

Publisher:

We are pleased to acknowledge your letter of Feb. 17 in which you described some features of AIR CONDITIONING AND REFRIGERATION NEWS and other publications issued by your company.

Your publications have for several years been very popular in our library where they are consulted frequently by people here interested in refrigeration and air conditioning. We hope that you will continue to favor us with these publications, as there is a growing interest in air conditioning in Australia.

We are regularly in touch with Mr. Hansen of F. C. Lovelock & Co., Sydney, who acts as your representative in Australia, accepting orders for your publications. From time to time people who see your publications in our library express an interest in subscribing to AIR CONDITIONING AND REFRIGERATION NEWS, or in buying one of your directories. These people are always referred to F. C. Lovelock & Co., an arrangement which we assume is quite satisfactory to you.

We take this opportunity to express our appreciation for your courtesy in making your publication available to this office. We shall continue to cooperate with F. C. Lovelock & Co. in promoting your interests here.

E. C. SQUIRE, American
Trade Commissioner in Charge.

Hutzler Bros. Is the A. M. C. Member Store

Associated Merchandising Corp.
Retail Research Association
1440 Broadway, New York City
May 18, 1937

Editor:

We note in the April 21 issue of AIR CONDITIONING AND REFRIGERATION NEWS, on Page 5 it is stated that O'Neill & Co. has dropped all refrigerator lines, including the A.M.C. brand line formerly handled.

The A.M.C. brand lines are carried only by the A.M.C. member stores shown on the margin of this letterhead. Hutzler Brothers Co. as you will note, is our Baltimore member store.

We would appreciate, therefore, you issuing a correction of this statement in your next issue.

MAE L. BROOKS

Rush!

Geo. S. Gularte Appliance Service
Wasco, Calif.

Sirs:

Please find enclosed check for one year's subscription to REFRIGERATION NEWS.

Please start this subscription with back issues, from February, 1937.

Also send me your RED BOOK.

I am lost without your NEWS.

Hoping that you may rush this subscription, I remain

GEO. S. GULARTE

I have just completed a course of training in refrigeration service and am starting into service work for myself.

Your magazine is sure interesting and should be read by all service men.
—R. McRae Clark, Gaston, Ind.

University of Maryland Refrigeration Research

University of Maryland
Agricultural Experiment Station and College of Agriculture
College Park
May 10, 1937.

Publisher:

Receipt is acknowledged of your letter dated April 21, indicating your interest in our work on refrigeration, and also your willingness to cooperate by furnishing bound volumes of AIR CONDITIONING AND REFRIGERATION NEWS for use in our library. The bound volumes of back numbers of this magazine also were received in good condition a few days ago.

We are glad, of course, to have these back numbers of this magazine and will place them in our library for convenient reference. However, in preparing the abstracts of refrigeration information, we must necessarily confine our activities to the latest information so that back numbers of the magazine cannot be of as great assistance to us as current issues would be.

In undertaking this venture, I have approached quite a number of magazines and technical journals and almost without exception thus far we have received whole hearted exchange. Naturally, those who contribute current numbers of their publications to this work should receive something in return and we sincerely trust that the abstracts will prove of real value to them.

Inasmuch as you have indicated your interest and support for this work, I am placing your name on the list to receive the abstracts for the first year.

LAWRENCE H. JAMES,
Head of the Department.

Information Sought By New Zealanders

Chas. Begg & Co., Ltd. (Wholesale) Manufacturers' Agents and Importers
Manners St., Wellington, C 1, N.Z.

Sirs:

Will you please post to us at Wellington two copies of your MASTER SERVICE MANUAL by K. M. Newcum, your refrigeration library volume 3. We enclose a draft covering cost of same.

We are subscribers to your REFRIGERATION NEWS and find this journal an excellent publication and a great deal of interest to us. Last year in one of your issues you gave full particulars and specifications of the different brands of American refrigerators, but so far this has not appeared in this year's issue.

Will you kindly advise whether you are issuing a similar list this year, and if not, where we could obtain this information.

J. B. MAUNDER

Extremely Useful

E. I. du Pont de Nemours & Co.
National Ammonia Division
Philadelphia
May 13, 1937

Sirs:

We enclose herewith, your coupon covering a renewal of our subscription to the AIR CONDITIONING AND REFRIGERATION NEWS for one year. We also enclose our check in the sum of $4.00.

May we take this occasion to tell you that in our opinion you are publishing not only a very up-to-date trade journal, but you are also furnishing the refrigeration industry with extremely useful information. May we particularly express our interest in the articles by George F. Taubeneck covering his around-the-world trip.

H. L. BALLOU

West Indies Want Kerosene Refrigerator

Merritt & Critchley
Exposters and Importers
80 Broad St., New York City

F. M. Cockrell:

We are indebted to the Kelvinator Corp., Mr. Wurzbach, for your name and address with the information that you would be glad to help us.

We should like very much to have you send us the names and addresses of manufacturers of kerosene-operated refrigerators for shipment to British, French and Dutch West Indies.

We are exporters of general merchandise to the West Indies and of late we have received requests for kerosene-operated refrigerators.

MERRITT & CRITCHLEY

Statistics Appreciated

Vendrink Co.
215 W. Superior St., Chicago

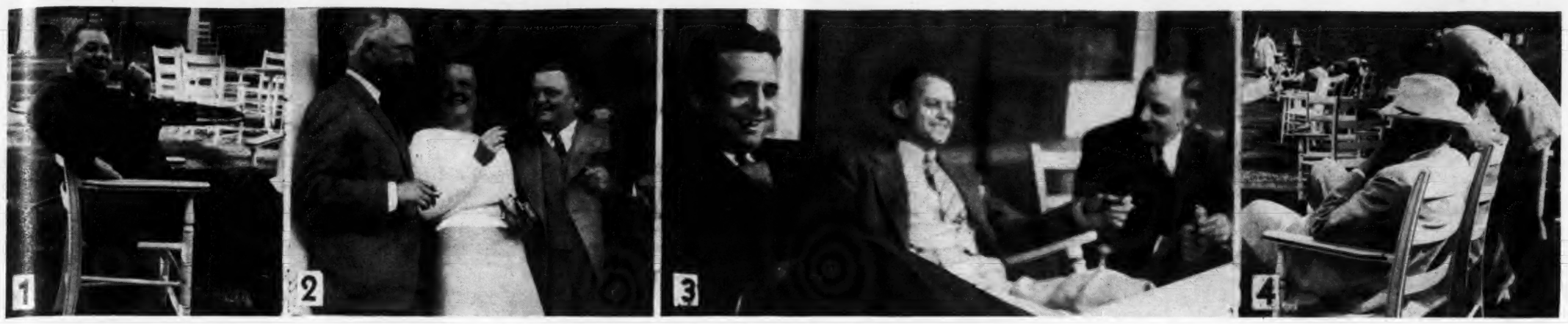
Editor:

The writer has been an interested reader of your paper for the last 10 years. He considers it the outstanding publication in this field and finds the news and editorial matter as well as statistics of great interest and help.

As soon as your COMMERCIAL REFRIGERATION SERVICE MANUAL is published please send us a copy; also kindly extend our subscription for another year.

LESLIE ARNETT.

Business Is Good—Very Good—So Refrigeration Men Smile Easily and Often



(1) R. E. Smithson, commercial sales manager, Frigidaire Corp., has joined the ranks of candid camera fans. (2) Henry W. Burritt, vice president, Kelvinator Corp., and Mrs. Burritt bid farewell to John Knapp, vice president, Norge Corp., as he starts to Covington to catch the C. & O. Sportsman to Detroit. (3) W. E. Landmesser, manager, commercial division, W. M. Timmerman, commercial engineer, and G. J. Chapman, manager, specialty appliance sales division, General Electric Co., Cleveland. (4) J. A. Harlan (in the white hat), commercial manager, Kelvinator Corp., and J. K. Knighton (standing), sales manager, commercial air-conditioning department, Kelvinator Corp., are spectators at the tennis tournament.

Philadelphia's First Modern Kitchen Show Attended by 29,000

PHILADELPHIA — First annual Modern Electric Kitchen Show sponsored by the Electrical Association of Philadelphia, and believed to be the first of its kind ever held in this country, closed here May 6 after registering an attendance of 29,000.

Originally scheduled to last a week, starting April 20, the show was held over to May 6 to accomodate additional thousands of visitors. More than 14,000 attended during the first week of the exhibition, registration figures show.

During the show, 387 requests for replanning kitchens were received, Electrical Association officials declare.

A preview of the exhibition was given by the association on the evening of April 19, at a dinner for more than 400 builders, builders' salesmen, architects, real estate men, banking and mortgage company executives and others.

In presenting the preview, George R. Conover, managing director of the association, said:

"A modern kitchen may be defined as one containing an electric range, electric refrigerator, ventilating fan, electric clock, and labor-saving kitchen appliances properly placed for sequence of work. It is well lighted, properly planned, and equipped with sufficient well placed electrical convenience outlets and correctly built-in cabinets."

Principal address at the dinner was made by George E. Whitwell, vice president in charge of sales of Philadelphia Electric Co. and national chairman of the Kitchen Modernizing Bureau.

During the first week of the show, the association sponsored an advertising program in several Philadelphia papers.

To develop additional interest, a $400 all-electric kitchen was given free to the person attending the show and submitting the 10 best reasons why all homes should be so equipped.

A series of afternoon programs for home-makers in the metropolitan area was presented on the show floor, where 700 seats were placed for each program. Average attendance for these programs was 1,000.

The following firms had exhibits at the show:

Judson C. Burns (G-E), Elliott-Lewis Electrical Co. (Hotpoint), E. E. Hedler-Roberts & Mander Stove Co. (Quality), J. J. Pocock Co. (Frigidaire), Raymond Rosen & Co. (Kelvinator), Westinghouse Electric Supply Co. (Westinghouse).

In conjunction with the kitchen exhibits, a "Kitchen Klinic" was conducted to advise housewives on methods of rearranging and remodeling their kitchens.

4 Additional Models Are Introduced By Hotpoint

CHICAGO—Four new models have been added to the Hotpoint line of refrigerators manufactured by Edison General Electric Appliance Co.

Largest of the four, the Super Imperial American, has 15.4 cu. ft. net storage capacity and a shelf area of 31.3 sq. ft. It will freeze 16 lbs. of ice, or 128 cubes, in a single operation.

The unit is equipped with a "Scotch Yoke" compressor and the vacuum-sealed "Thriftmaster," and has forced-feed lubrication. A nine-point temperature regulator is located in the top of the freezer compartment.

Accessories and convenience features include: stainless steel shelves; interior light; three foot pedals to open the vegetable bin, food storage compartment, and freezing chamber; aluminum and rubber ice trays; dessert tray; two vegetable drawers; three covered glass dishes; butter dish; water bottle; ice tray release; glass chiller tray; and food safety gauge.

The Super Imperial Empire model, identical with the American in structure, features, and operation, has a capacity of 12.5 cu. ft., a shelf area of 22.7 sq. ft., and freezes 14 lbs., or 128 cubes, of ice.

Designed to occupy a minimum amount of space, the new Hotpoint Model EB21 kitchenette refrigerator measures only 21 inches wide and 24 inches deep. A counter balance holds top of this lift-top model at any angle, but when closed the top may be used as a working surface.

The cabinet is built with a one-piece steel outer shell, and a one-piece, porcelain-on-steel inner liner. The entire mechanism is sealed in steel, and is said never to require oiling.

Model EB31 in the kitchenette refrigerator line differs little in construction from its partner, except that the door is on the front of the box instead of the top. The box is powered by the Hotpoint "Thriftmaster," in a welded steel case.

N. Y. Crosley Distributor Ready to Make Price-Fixing Contracts with Dealers

NEW YORK CITY—The Crosley Distributing Corp. has notified its dealers in the New York area that has approved a price-fixing contract to become effective "as soon as similar actions can be gotten on the part of our major competitors."

"The Crosley Distributing Corp. in New York is heartily in favor of the aims and purposes of the Feld-Crawford Act," the statement read.

"Our legal department has put its stamp of approval upon a contract substantially the same as that prepared by the Electrical Appliance Dealers Association of Brooklyn.

"We are prepared to send out these forms just as soon as similar actions can be gotten on the part of our major competitors.

"In the meantime, we are continuing to enforce the same rigid policy of price maintenance as we have had for the past three years, and to keep from our list all dealers who have a tendency to upset this policy."

C.I.T. Corp. Declares Regular Quarterly Dividend

NEW YORK CITY—Directors of Commercial Investment Trust Corp. have declared a regular quarterly dividend of $1 per share in cash on common stock, payable July 1 to stockholders of record June 5.

The regular quarterly dividend of $1.06¼ on convertible preference stock, $4.25 series of 1935, was also declared payable at the same time as the common stock dividend.

H. M. Weber Joins Johnson Distributing Co. Staff

TAMPA, Fla.—H. M. Weber has joined the sales staff of the Johnson Distributing Co., Crosley distributor, and will cover the Florida west coast territory, announces J. E. Johnson, president of the firm.

ASK FOR NEW BULLETIN 144C
"T" Series Thermo Valves
ALCO VALVE CO., Inc.
ST. LOUIS, MO.

RENEWABLE SEAT

Here is an Automatic Expansion Valve with remarkably long life . . . one you can install and forget. Fast-moving gases simply cannot score or pit it. The non-metallic, corrosion-proof poppet and seat require little or no servicing . . . are readily renewed when necessary, at little cost, by the service man.

This poppet construction and other exclusive features of design make the Sylphon Valve your logical choice. Ask for Bulletin O-5000.

FULTON SYLPHON COMPANY
Refrigeration Division
KNOXVILLE TENNESSEE

Sylphon
AUTOMATIC EXPANSION VALVE

ONE DEALER PUTS IT THIS WAY—

Business is Great, Thanks!

"AIR CONDITIONING and refrigeration booming? You're telling me! But, what's more to the point, I'm getting my share! Two deals already this week. Sold that little neighborhood grocery and landed the contract for air conditioning the First National Bank Building. Believe me, that's going to be a whopper! And that's where I'm in luck. Big or small jobs, I'm set to handle them. With the Baker line I don't miss any bets . . ."

Baker's complete line means complete selling. A limited number of excellent territories are still open. Inquiries are invited from responsible parties.

BAKER ICE MACHINE CO., INC., OMAHA, NEBR.
1506 Evans St.
BRANCH FACTORIES
Fort Worth
Los Angeles
Seattle

BAKER

Authority on Mechanical Cooling for Over 30 Years

Correct Design and Replacement Of Air-Supply Outlets Will Insure User Satisfaction

By F. O. Jordan

IN one way, air conditioning is like married life, for selling the idea may be only the beginning of the trouble. While selling the idea is one thing, living happily ever afterward with what you got is something else again.

Many dealers have sold certain air-conditioning installations and afterward have regretted the fact because they could not induce the purchaser to live happily with what he had paid for, and nothing jeopardizes the future of a salesman like a dissatisfied customer.

Obviously, it is most essential that air-conditioning equipment of suitable type and capacity be installed, with the proper amount of cooling and dehumidifying effect in the proper proportions for the particular type of project. All functions of the apparatus must be under some effective control so that the comfort machine will not run wild and belie its good name when load conditions vary as they often will do.

But even with **real** air-conditioning equipment which actually can deliver the goods in the form of the honest cooling and dehumidifying ability, it is necessary to distribute its refrigerating power equitably over the entire conditioned space in proportion to the varying heat loads existing there, or else the result is like one of those restaurants where on one side of the table the icy blast pouring down the back of your neck stiffens your fluttering shirt-tails in the frigid breeze, while on the other side of the festive board you swelter in the fumes of your soup.

Air distribution really is a problem sometimes. If the space to be conditioned is clear of obstructions and has a nice regular shape about 25 or 30 feet wide with a ceiling of fair height, and a moderate load spread evenly about the premises, then there is nothing to it if you know anything at all about your business.

But when the place is a Gerrymander-shaped puzzle with low-hung ceilings, and is forested with mighty columns and festooned with chandeliers, then most anything can happen especially if batteries of urns, hairdryers, etc. are allowed to mingle with the customers.

Air distribution, which in turn regulates distribution of refrigerating effect, can be controlled readily enough as long as it is in the duct distribution system, for it is yet in your power. But once it has escaped your grasp to wander at large about the conditioned space with its B.t.u. of refrigeration, then you can control it only through the early training received at the supply grilles before it passed beyond your direct influence. For this reason, the air supply grille must play an important part in your career as an air-conditioning engineer.

For the air stream to venture forth upon its career of distributing temperature about the conditioned space with any hope of satisfying the occupants of the space, two characteristics must be regulated at the grille serving as its threshold of entry, namely, direction and velocity.

The direction of the entering air stream must be such that the cooled air is directed to the principal points of heat gain, so that the refrigerating effect can meet and overpower the heat B.t.u. before they can harm the human occupants. Therefore, hot walls and ceilings must be blanketed with an insulating layer of refrigerated air; hot appliances must be swept by cooling air volumes; while comforting breezes must be permitted to settle down upon the occupants so gently that they are not even aware of it—but are merely comfortable.

The direction and diffusion of the conditioned-air stream may be properly regulated by means of diffusing or direction type grilles or blades at the air-supply openings.

The required velocity of air stream depends upon these four factors:

1. The **"differential"** between the room dry-bulb and entering air dry-bulb air temperatures.

2. The **"throw"** or the distance from the supply grille to the wall or obstruction in front of it.

3. The **"fall"** or the vertical distance through which the air may settle during its trajectory of flight before it can be felt by occupants.

4. The **"air-noise"** resulting from the passage of the air through the grille.

For the greater throw, and for the colder (hence heavier) air, higher air velocity must be employed to prevent the air stream from falling short of its mark, resulting in a warm zone at the room's far end, and a cold, drafty zone nearer the grille.

However, if the entry velocity is too great for the throw and the temperature differential it will overshoot the intermediate areas in the foreground, to cascade down the wall forming the background. The result will be an uncomfortably cold and turbulent zone near the wall, and a dead warm zone between distant wall and grille.

A deep breasted beam, or particularly corpulent lighting fixture in the path of the air current will have the same effect as a wall in reminding the unfortunates below of the time when they passed under the falls of the Bridal Veil at Niagara.

For the lesser allowable distance which the air stream may fall without striking the occupants during its journey across the room, and for the colder air, higher velocities are required in order to hold the air above the occupancy zone until it has been properly tempered by mixing with room air. Thus for lower ceiling heights, higher velocities are necessary, so that the very low ceiling presents a problem, similar to the room of very long throw, because high velocities are productive of noise.

When the required air velocities demanded by room characteristics and low entry air temperature are so great that undesirable noise will result, two alternatives are available:

Either the air may be delivered at a higher temperature, which necessitates handling larger air quantities in order to carry a given refrigerating load, or the distances of throw must be reduced by closer spacing of supply openings.

In the case of the large space in which walls are long distances apart, the spacing of the supply openings often can be reduced only by use of ceiling supplies.

If the ceiling supply were merely an opening in the ceiling through which the cold air could drop vertically downward, most of the refrigerating effect of the air-conditioning apparatus would be merely dumped into restricted areas of deadly cold immediately beneath the supplies, while areas between would receive but little benefit of the air-conditioning process.

For this reason, the approved procedure is to install a plate somewhat larger and a few inches below the opening so that the vertical area around the edge of the plate and the ceiling is such that the air stream is "squirted" out horizontally at the ceiling all around the plate at the proper velocities depending upon the four factors enumerated above. Generally the area between the plate and the ceiling is filled in with a directional grille element of suitable shape.

Fixtures are available in which the air is supplied outward from the edge of the plate as described above, while a center opening is provided connecting to a vent duct, so that the warmed air, upon rising from the zone of occupancy, escapes from the room by passing upward through the central vent.

Both ceiling fixtures as described above, and wall supply grilles, are available which discharge all air horizontally, and which discharge horizontally from the upper portion of the grille, and at a downward angle from the lower portion. More even distribution may be obtained by judicious use of the latter type of two-way grille.

Wall-type grilles which are located some distance below the ceiling may be set to discharge at a slight angle above the horizontal, as the throw with a given velocity may be increased somewhat by this arrangement.

Air Supply Variations

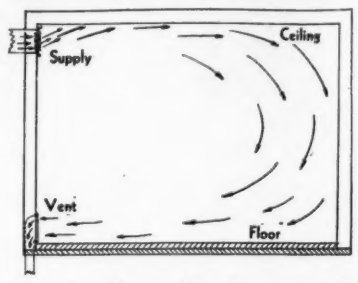


Fig. 1—Air motion in room with wall supply grille discharging horizontally only.

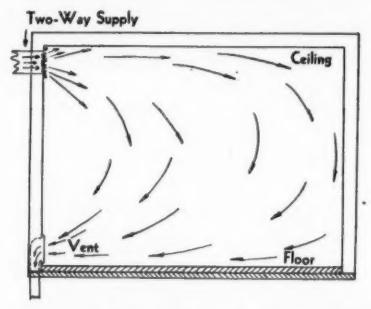


Fig. 2—Air motion in room with two-way grille discharging part of air horizontally and part at downward angle.

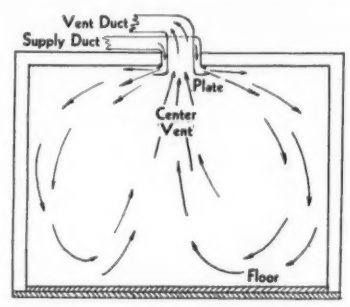


Fig. 3—Air motion in room with combination supply and vent ceiling fixture.

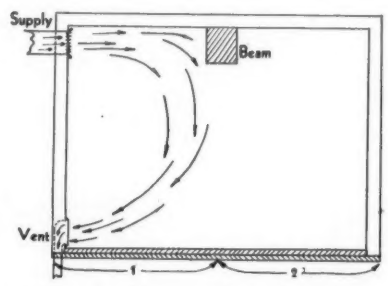


Fig. 4—Air motion in room where air stream is blocked by deep beam. The area denoted by bracket 1 will be too cold; the area denoted by bracket 2 will be too warm.

Natkin Installs System In Two Floors of Oil Firm's Tulsa Branch

TULSA, Okla.—Westinghouse air-conditioning equipment is now being installed by Natkin & Co., distributor, for the entire second and third floors of the local branch of the National Supply Co. of Delaware.

The National Supply Co. is one of the few large manufacturers in the country catering to the oil industry in the making of "Superior" gas and oil engines, and oil drilling equipment of all kinds.

The local office of the National Supply Co. constitutes the largest branch office of the company, the main office being located in Pittsburgh. The building which houses the local branch was constructed by the National Supply Co. about four years ago and is a reinforced building 75 ft. wide by 150 ft. long, with basement and three stories and is faced with yellow brick.

The basement and first floor are used for files and for total sales, respectively, while the second and third floors, which are being air conditioned, are used for general offices. Before being conditioned the entire third-floor ceiling was insulated with a 4-in. thickness of Johns-Manville rock wool.

The air-conditioning system is for all-year use, including the cooling and dehumidifying functions in the summer, heating and humidifying in winter and air circulation at all times.

Central system air-conditioning units are located on the second and third floors, and air condition their floors through suitable duct systems.

Summer cooling and winter heating, respectively, are accomplished by circulation through the air-conditioning units of chilled water or hot water by means of two circulating pumps located in the basement and connected in parallel, so that either pump can carry the load in the event that either should fail.

Cooling of the water which is circulated through the air-conditioning units is accomplished by a Patterson-Kelly shell and tube Freon water cooler. The water is heated during the winter by an instantaneous water heater through the agency of steam which is furnished by an existing steam boiler.

Refrigeration for the cooler is provided by two 40-hp. Westinghouse sealless compressors driven by the latest gas-cooled motors. In connection with the compressors two Westinghouse evaporative condensers are used.

Each of the condensers is provided with its water-circulating pump, while a third standby pump is provided with proper connections so that it may be used with either condenser in the event of failure of its pump. Thus, continuous operation is virtually assured.

Each of the air-conditioning units distributes conditioned air to the offices upon its floor through ducts which are furred in with lath and plaster, and which are divided into three zones per floor and controlled to balance the daily shift in sun effect.

It is anticipated that the air-conditioning plant will be in operation about June 1 of this year.

Plans Laid for Heating & Ventilating Show

(*Concluded from Page 1, Column 3*)

ment, and auxiliaries. Most exhibitors will show their air-conditioning systems in operation with other sections devoted to materials of construction.

Previous International Heating and Ventilating Expositions have been staged under the same management at two-year intervals in leading cities. The first was held in Philadelphia in 1930, the second in Cleveland, and the third in New York City. Last year's exposition was held at the International Amphitheater in in Chicago.

Since its inception, the exposition has been attentive to requirements of the combined markets it represents, and is attended by architects, engineers, contractors, and executives of every type of industry. No tickets are sold, admission being by invitation or registration only.

The advisory committee for the fifth exposition will be: chairman, D. S. Boyden, Edison Electric Illuminating Co., Boston; vice chairman, Edward H. Gurney, Gurney Foundry Co., Ltd.; Edward E. Ashley, consulting engineer; Potter Bowles, Hoffman Specialty Co.; Willis H. Carrier, Carrier Corp.

W. A. Danielson, Q.M.C., U.S. Army; Walter L. Fleisher, consulting engineer; Arthur R. Herske, American Radiator Co.; G. L. Larson, University of Wisconsin; A. J. Offner, consulting engineer; Clyde R. Place, consulting engineer; D. J. Purinton, Vorhees, Gmelin & Walker; Lionel L. Jacobs, Oil Burner Institute.

H. T. Richardson, National Warm Air Heating & Air Conditioning Association; Edwin W. Smith, Institute of Boiler and Radiator Manufacturers; H. P. Morehouse, American Gas Association; Homer Addams, Steel Heating Boiler Institute; George H. Dickerson, Heating, Piping & Air Conditioning Contractors' National Association.

Premo Heads Sales Division For A. Wayne Merriam

SCHENECTADY—T. W. Premo has been appointed divisional sales manager for the wholesale department of A. Wayne Merriam, Inc., General Electric distributor in this territory. Joining the Merriam sales organization in 1933, Mr. Premo had been a retail salesman in the company's Schenectady store.

MANHATTAN
V BELTS
THE MANHATTAN RUBBER MFG. DIV.
Of Raybestos-Manhattan, Inc.
45 Townsend St. Passaic, N. J.
Run smoothly . . . without noise . . . and last longer; repeated tests prove this.
The highly satisfactory service and life of these belts is due to the exclusive Manhattan construction: the endless Whipcord is completely floated in rubber, welded securely into a strong tension member which is placed in the neutral axis area. Above this an extensible section and below, a compression section. Result: internal heat reduced to a minimum.

FIRST EDITION OF ANSUL HOUSE ORGAN
SULPHUR DIOXIDE
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THANKS A MILLION
Don't ever think it didn't make us feel good when we saw the response you gave the first edition of "Ansul News Notes." The fine letters of comment are mighty encouraging, and should lead us on to greater literary efforts.
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Hardware Concern Finds New Income In Making Ducts

(Concluded from Page 1, Column 2)

extend along both sides of the wall and connect with an exposed duct on the roof, which is thoroughly insulated and waterproofed. In addition to this, a small duct carries conditioned air from the end of the north wall to the girls rest room in the basement.

In order not to interfere with the store's regular business, the ducts were built at Dennis & Son shops, and installed at night. The job took three weeks for completion.

One of the chief problems connected with this installation, Mr. Dennis states, was that each night the merchandise in the sections of the store where the service men were working had to be completely covered, and the covering had to be removed and the store cleaned up, before the men left in the morning.

Established in 1881, this hardware firm has behind its new merchandising activity, years of experience in the field of merchandising hardware and heating and ventilating equipment, and in sheet-metal work.

The firm's shops provide ample space in which to lay out and build ducts. Men employed in the department which now cares for duct-building work are trained and experienced in handling heating and ventilating problems.

In the opinion of Mr. Dennis, the hardware firm which enters and wishes to make a success in the air-conditioning field must be fortified with "adequate facilities, experienced help, the necessary equipment, ample financial resources, and a sound sales policy."

Gay Engineering Corp. Opens New $150,000 Office Building

LOS ANGELES—Built-in air-conditioning equipment and glass-block wall panels feature construction of Gay Engineering Corp.'s new $150,000 office and industrial building, recently opened for public inspection.

The entire plant was designed and planned to afford a practical demonstration of the comfortable working conditions made possible by modern engineering.

Air-conditioning equipment has complete, automatic controls. The same refrigerating compressors are used to cool the building in summer and warm it in winter, by the reversed refrigeration cycle method. There are no radiators, vents, grilles, or chimneys, all air ducts being integral parts of the construction.

Conditioned air is forced out into the rooms through narrow openings in the sills at the base of the Insulux glass-block panels in the walls.

The air-conditioning installation is small and compact, controls temperature and humidity within a fraction of a degree at all times, and requires no further attention when once started.

Providing perfectly diffused lighting and efficient sound insulation, the glass-block walls represent the most extensive industrial utilization of glass blocks for masonry and daylighting ever attempted in Southern California.

The Insulux blocks, made by the Owens-Illinois Glass Co., are hollow, have a thickness of four inches and a face of eight inches square, and fill the panels in the structural frame on the street front of the office portion.

Founded in 1905 by Cassius M. Gay, who pioneered in mechanical refrigeration in the early days of Southern California's citrus industry, the Gay Engineering Corp. has served the majority of the ice-producing companies of California and Arizona, has air conditioned numerous buildings in the West, including film laboratories and motion picture sound stages, and has supplied and installed more than $6,000,000 worth of pre-cooling equipment for leading American citrus associations.

TEMPRITE
INSTANTANEOUS
BEER and WATER COOLERS
Detroit Michigan

L. Lewis Urges Textile Heads to Protect Worker's Health

WASHINGTON, D. C.—Economy and protection of the health of the worker were named recently by L. Logan Lewis, chief engineer of Carrier Corp., as the main functions of textile air conditioning.

Addressing the Rayon Technical Conference, commemorating the 25th anniversary of the manufacture of rayon in the United States, Mr. Lewis first pointed out that air conditioning got its start in the textile industry when manufacturers found they could turn out a better product at less cost.

"For about 15 years, the comfort which air conditioning could bring to human beings was unknown except by those engaged in industry"; he explained, "and its application was limited to their places of work."

Mr. Lewis then traced the steps which led to air conditioning for health protection, pointing out that although financial returns prompted most early installations, many industrialists found that efficient, happy and healthy workers also makes for economy. He credited theater installations for the "break" into comfort air conditioning and for making the world 'air-conditioning conscious."

In discussing the specific uses for air conditioning in textile plants, Mr. Lewis outlined the four systems most commonly found in all applications. They are:

1. Winter air conditioning.
2. Evaporative cooling.
3. Summer air conditioning.
4. Year-around air conditioning.

"Of these, the last three are extensively applied in all textile processes," he said. "The first rarely meets all the needs of any industrial process, but has a great field in residences. In evaporative cooling, air is drawn through a conditioner in which it is treated with a spray of water or passed over wetted surfaces designed for effective exposure."

Purposes of air conditioning in textile plants devoted to the manufacture of synthetic yarns were listed by Mr. Lewis as:

1. Controlling the rate and extent of chemical reaction.
2. Protecting the worker from harmful by-products of the process.
3. Fixing the regain, and hence, certain physical properties of the product.
4. Improving the efficiency and health of the worker.

"To accomplish the simplest of these, the regulation of temperature, humidity (in some cases only), and air motion is essential," he explained. "Equipment therefore may be relatively crude or highly refined. . . ."

Mr. Lewis then took up, step by step, the various processes in the manufacture of synthetic yarns and analyzed their air-conditioning needs.

VISCOSE PROCESS

Step 1—Raw Material Shortage. Heating only is required for the storage space.

Steps 2 and 3—Steeping and Shredding. Steeping requires no air conditioning. Shredding—the general practice is summer air conditioning, to maintain absolute humidity.

Step 4—Ageing. A system is applicable embodying only the elementary function of heat removal with regard to humidity.

Step 5—Xanthating or Churning. In the practice of conditioning churn rooms, it has long been recognized that maximum freedom from the explosion hazard requires continuous introduction of a relatively large volume of outside air. Practice has established an air change approximately 20 times per hour. All air supplied to the churn must be taken from outdoors, conditioned, and then wasted.

Step 6—Ripening. Refrigeration of the utmost reliability is essential, for if the solution rises above a certain critical temperature, coagulation will destroy its value as a spinning solution.

Step 7—Spinning. The purpose for which air conditioning is needed in this process are manifold. Evaporative cooling is essential, with great emphasis on dissipation of the gases generated by chemical reaction in the spinning process, thus eliminating the chance for irritation to the lids and eyeballs of workers.

Step 8—Cake Storage. The problem is one of winter air conditioning.

Step 9—Reeling and Lacing. Evaporative cooling equipment is required; good air distribution is required, with air motion limited by the delicacy of the threads.

Steps 10 to 14 inclusive—Washing, drying, desulphurizing, bleaching, and centrifuging, final drying, and conditioning.

Except for the drying process, the need for air conditioning is limited to heating, in the design of which some consideration must be given to the vapors from washing operations. Evaporative cooling is required for the regain section of the dryer.

Step 15—Grading and Sorting. Comfort and efficiency of the worker becomes an important factor here just as it is in certain preceding steps. The air-conditioning equipment must have a high cleaning efficiency and the system must embody all of the functions of the year-around air conditioning.

Step 16—Warping, Winding, and Quilling (processing). Best results are obtained with year-around air conditioning holding 80° F. and 55% relative humidity.

ACETATE OR CELANESE

Air-conditioning problems presented by this process are quite similar to those of the viscose process.

Up to spinning, the rates and limits of chemical reactions must be controlled by regulation of temperature almost without regard to relative humidity. Acetic acid fumes likewise must be kept under control to guard the health of the employe.

WEAVING AND OTHER USES

Year-around air conditioning to which refrigeration is essential, is not economically practical because of the large internal heat gain for the average weave room. Comfort conditions which can be maintained with evaporative cooling improve as the relative humidity is raised. Constant relative humidity, however, is very important.

REFRIGERATION QUALITY
ISO-BUTANE
IN 100 LB. CYLINDERS
Available for prompt shipment from our large warehouse stock.
WRITE OR WIRE US FOR OUR LOW NET F.O.B. PRICES
CONSERVATIVE GAS CORP.
1084 BEDFORD AVE. BROOKLYN, N.Y.

Sound-Proof Display Rooms Operated by G-E Outlet

BALTIMORE — Three air-conditioned sound proof demonstration and display rooms, the largest of which contains refrigerators and major appliances, the second radios, and the third laundry equipment, have been constructed in the main floor display space at the General Electric Supply Corp.'s branch at 5-9 Gay St. here.

The rooms will be available for the use of local General Electric dealers, who can bring their customers to the distributorship for demonstrations, and for the use of the General Electric Supply Corp.'s salesmen for exhibiting displays and conducting demonstrations for dealers.

General Electric Supply Corp. is the first Baltimore refrigeration and appliance distributor to construct display rooms of this type.

C.I.T. Opens Office In Charleston

CHARLESTON, S. C.—To handle increased business activity in Charleston and surrounding territory, C. I. T. Corp. has opened an office at 18 Broad St. here in charge of J. T. Brinkley, Jr. Assisting him in dealer and manufacturer contracts will be H. F. Yost, who will divide his time between this and the Columbia, S. C., office.

The Charleston office will handle financing of wholesale acquisitions and retail instalment sales of automobiles and major household appliances in Charleston, Berkley, Dorchester, and Colleton counties.

Marshall Sells Interest In Denver Store

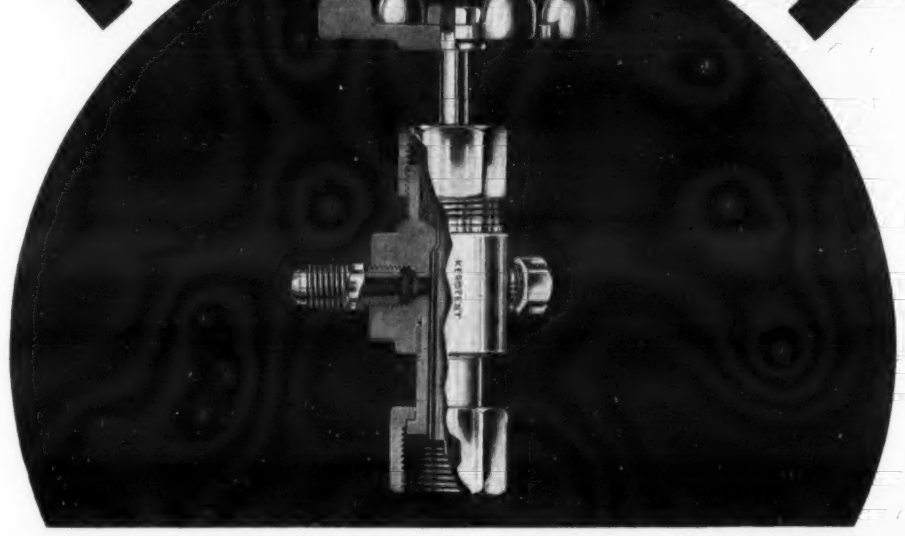
DENVER — Willis Marshall has sold his half interest in the Intermountain Appliance Co., Westinghouse distributorship here, to his former partner, T. F. Savage, and has purchased the capital stock of the Moore-Bird Co., formerly Crosley distributor.

The firm name, Moore-Bird Co., will be retained, according to Mr. Marshall, who plans to secure a new line of refgrigerators.

Dayton Appliance Firm Gets Kelvinator Franchise

DAYTON — The North Riverdale Appliance Shop has been appointed a Kelvinator electric refrigerator and range dealer here. W. W. Goode is owner of the company.

KEROTEST



KEEPS CONSTANT PACE WITH THE NEWEST DEMANDS OF THE INDUSTRY

MAINTAINING an intimate contact with the technical problems of the refrigeration industry, Kerotest engineers are constantly developing new products and new improvements. Pioneering in the development of improved valves, fittings and accessories, Kerotest engineers are still pioneering—still blazing the trail to safer and more efficient control of refrigeration flow. Their saga is to design refrigeration control equipment not merely just as good but BETTER than it was ever made before. Such is the price that Kerotest willingly pays for the leadership it enjoys throughout the industry.

One of the latest developments is the new line of Kerotest Purging and Charging Valves—designed especially for the various makes of hermetically sealed refrigeration units. Special heat treated stems give them strength where strength is needed. Included in their design is a gauge connection *independent* of the service connection—a small improvement but vitally important from a service and safety standpoint.

This is typical of the many improved Kerotest Valves, Fittings and Accessories now available through Kerotest Jobbers in every important industrial center.

KEROTEST
REGISTERED U.S. PAT. OFF.

KEROTEST MANUFACTURING CO.
PITTSBURGH, PA.

How to Select and Install Air Conditioning Systems

By T. H. Mabley

Case No. 17

A Wing of A Factory

A typical installation in the industrial field, as illustrated in Fig. 1 is for a single floor on one wing of a factory building.

The space might be used for almost any type of work; it might be a composing room in a printing plant, a textile machinery room, or some other industrial process room.

In this problem the air-conditioning contractor will be concerned with all the present accepted fundamentals of an air-conditioning system. First, the space must be heated and a temperature condition maintained both for the process, and for the comfort of the occupants during the winter weather.

During the summer weather it is planned to maintain a comparatively comfortable condition for the occupants which will indirectly help the process work being carried out in the room by increasing efficiency of the workers, and by reducing the usual body moisture found on the hands of the workers.

HUMIDITY CONTROL

This latter feature is partially due to the control of the humidity in the work space as well as temperature control, and we will design the proposed system to give a certain proportion of dehumidification along with the cooling function.

Control of the minimum humidity during the winter season also will be a feature of this system, as the owner appreciates the value of maintaining the best air conditions that are obtainable through practical methods, from the standpoint of healthful working conditions.

OTHER FUNCTIONS

Further consideration will be given to the other major functions of any system, namely air cleaning and circulation. There must be circulation to assure proper temperature and humidity control and to maintain some quality of evenness of these conditions over the entire area to be conditioned.

Included with this function is the item of ventilation. While the process itself does not generate any harmful or objectionable odors or foreign matter that might require a special ventilation treatment, it is always desirable to provide the proper quantity of fresh air necessary for the comfort of each occupant.

Further we will want at least to introduce through the conditioning equipment an amount of fresh air that would be equivalent to the normal infiltration. Since the building is located in an industrial area and since the work being carried on in the room creates some dust we will naturally include some means of filtering the air as it passes through the system.

As to the limits of performance of each of these functions we must select certain design conditions. For the particular locality under consideration we will use a minimum temperature of —15° dry bulb and a maximum condition of 95° dry bulb and 76° wet bulb.

With these outside conditions we will endeavor to maintain inside a minimum of 70° dry bulb and 25% relative humidity, and a maximum of 80° dry bulb and 50% relative humidity.

While the ideal humidity range is from 40 to 60% relative with a dry bulb of approximately 70° we are limited in several respects from maintaining this condition during the entire year.

First of all, if we tried to maintain such a high humidity condition during the coldest winter days we would encounter serious condensation on the windows. Secondly, if we tried to maintain as low a temperature as 70° during the warmest summer days the temperature differential between the inside and the outside would not only be impractical and costly to maintain, but might be physically detrimental to the occupants of such a conditioned room.

VENTILATION DESIGN

The design values for the ventilation requirement are rather easily selected in this case as we are not concerned with any definite ventilation problem from the standpoint of air dilution for partial purification. In checking the normal air infiltration of the space under consideration we find that we may expect approximately three changes of air per hour.

This figure is rather high due to the large area of factory sash windows on three sides. This number of air changes will result in a total volume of 3,000 c.f.m. of outdoor air. Since this value gives us a figure of 30 c.f.m. per person we may be fairly safe in using this amount of fresh air in our design calculations.

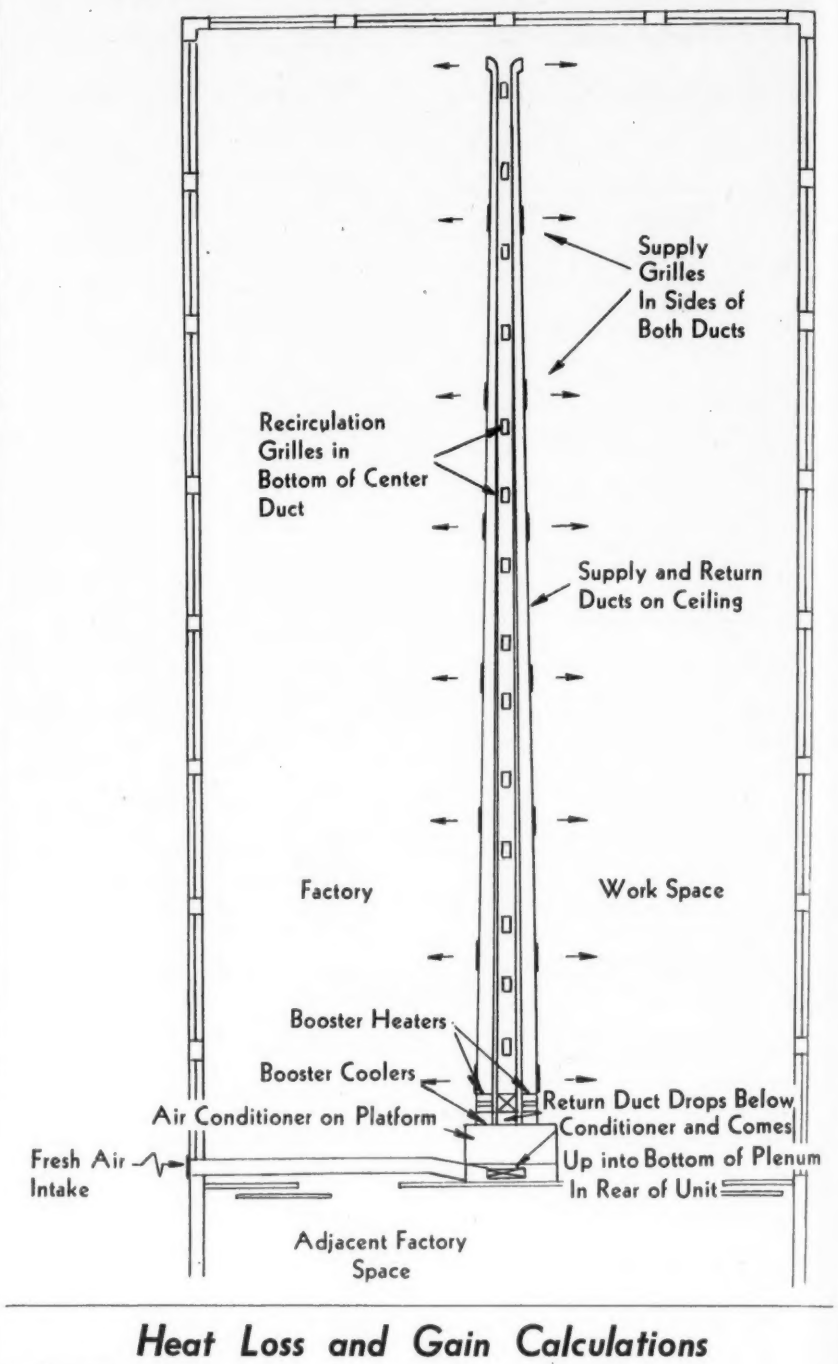
With the foregoing data and a detail survey of the space to be conditioned, we can now proceed with the heat load calculations. A summary of these calculations is shown in Table 1.

AWNINGS IMPRACTICAL

It may be observed that due to the activity of the occupants a higher value of B.t.u. output per person was used in the occupancy load. Because the work space is lighted primarily through the daylight that comes in from the large windows it was found impractical to install awn-

(*Concluded on Page 19, Column 1*)

Layout for Factory Wing Installation

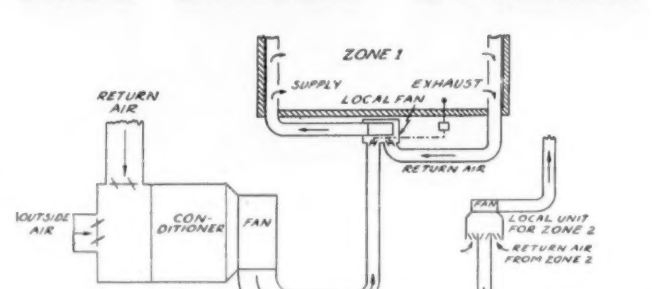

Supply Grilles In Sides of Both Ducts
Recirculation Grilles in Bottom of Center Duct
Supply and Return Ducts on Ceiling
Factory
Work Space
Booster Heaters
Booster Coolers
Air Conditioner on Platform
Return Duct Drops Below Conditioner and Comes Up into Bottom of Plenum In Rear of Unit
Fresh Air Intake
Adjacent Factory Space

Heat Loss and Gain Calculations

Heat Loss	
Conduction:	
Windows—3,010 sq. ft. x 1.13 x 85°	289,111 B.t.u.
Walls—1,389 sq. ft. x .42 x 85°	49,587 B.t.u.
Fresh Air—3,000 c.f.m. x 1.03 x 85°	262.650 B.t.u.
Total Loss	**590,348 B.t.u.**
10% Exposure Safety Factor	59,035 B.t.u.
Humidification Load 3,000 c.f.m. x .64 x 28 grains	53,760 B.t.u.
Total Heat Loss	**703,143 B.t.u.**
Heat Gain	
Sun Effect:	
Windows—910 sq. ft. x 180 B.t.u.	163,800 B.t.u.
Walls—550 sq. ft. x 20 B.t.u.	11,000 B.t.u.
Conduction (Areas not figured in sun effect)	
Windows—2,100 sq. ft. x 1.13 x 15°	35,595 B.t.u.
Walls—830 sq. ft. x .36 x 15°	4,482 B.t.u.
Partition—480 sq. ft. x .45 x 15°	2,160 B.t.u.
Floor—5,000 sq. ft. x .59 x 15°	44,250 B.t.u.
Ceiling—5,000 sq. ft. x .59 x 15°	44,250 B.t.u.
Fresh Air—3,000 c.f.m. x 1.03 x 15°	46,350 B.t.u.
Occupancy—100 people x 250 B.t.u.	25,000 B.t.u.
Appliances—55,000 watts x 3.4	187,000 B.t.u.
Total Sensible Heat	**563,887 B.t.u.**
Fresh Air—3,000 c.f.m. x .64 x(105—76) grains	55,680 B.t.u.
Occupancy—100 people x 300 B.t.u.	30,000 B.t.u.
Total Latent Heat	**85,680 B.t.u.**
Total Heat Gain	**649,567 B.t.u.**

Ratio—Sensible Heat/Total Heat .868.

FOR MODERNIZATION AND ZONED SYTEMS



AUDITORIUM Conditioning Corporation presents this system (*) especially for those who wish to include air conditioning in their modernization programs and for those who desire to install an air conditioning system which can provide wide variations in air conditions in different parts of the same enclosure or building.

Intensively conditioned air is delivered from a central source to a number of units serving separate rooms or different parts of a single area. At each unit the cold air is augmented by room air under manual or automatic control so that air at different final temperatures may be delivered by the different units.

The system is economical as its operation is limited to active units. Sun effect and different degrees of occupancy are compensated for. It is of special value in hotels and offices where different people have different ideas of comfort.

Our licensees will gladly give you further information and tell you of many variations of this system for accommodating different conditions.

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Frick Co. Waynesboro, Pa.
General Electric Co. Schenectady, N. Y.
J. O. Ross Engineering Corp. New York, N. Y.
The Cooling & Air Conditioning Corp. *Division of B. F. Sturtevant Co.* Hyde Park, Boston, Mass.
Westinghouse Electric & Manufacturing Company East Pittsburgh, Pa.
York Ice Machinery Corp. York, Pa.

(*) Auditorium Air Conditioning Systems are covered by many issued patents and pending applications.

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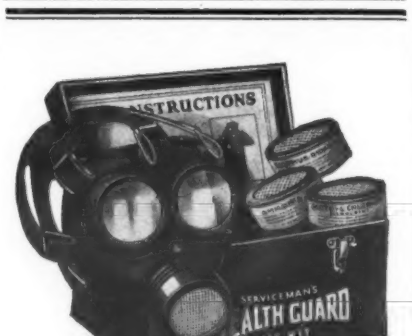

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PLANT AT LANCASTER, PA.

Special Control Scheme Needed for Factory Wing Installation

(*Concluded from Page 18, Column 3*)

ings to reduce the sun load on the south exposure.

No sun load was considered for the western exposure as the south windows absorb the larger amount of sun rays and the actual sun load will be less when the sun shines directly from the west.

APPLIANCE LOAD

The appliance load represents a large portion of the sensible heat gain, but this cannot be eliminated to any appreciable extent as the wattage indicated is made up primarily of motors on machinery which are actually in the conditioned space.

It would be impractical to remove them and drive the machines through an indirect drive system. Such a change would only reduce a small part of the total heat load from the electrical equipment as the major part of the power is expended in driving the machinery in the room and thus will have to be included in the internal heat load.

With the total load figures we can next select the equipment to give the necessary performance. The air conditioner may be a standard prefabricated unit or may be built on the job. The major parts of the unit will be in a blower to handle the full volume of air required for the load which in this case is 20,000 c.f.m., a tempering coil, a spray humidifier, a cooling coil, and filters.

In addition to this equipment it will be necessary to provide controls, a blower motor and belt drive, booster heating coils and cooling coils. The booster coils will be installed outside of the conditioning unit itself, but of course will have to be connected with the same control system and a drain will have to be provided for the booster cooling coils. For these reasons the external coils will be located as close as possible to the major conditioning unit.

ARRANGING EQUIPMENT

Arrangement of the equipment in this particular case is rather simple. The conditioner is mounted on a platform at the unexposed end of the space. The cooling machinery is located on the floor below.

In this installation we are seriously concerned with the problem of air distribution. For this reason it is necessary to provide a complete return air-distribution duct to assure evenness of the air circulation.

In a problem where we were not so concerned with this matter we might have eliminated the large return duct and brought all the air back to the unit at the rear of the conditioner directly; however, such an arrangement would give excessive circulation of air at one end of the room.

With the duct layout as shown we will have two supply ducts to distribute the required amount of air to each particular one in the conditioned space and a return duct in the middle to take back the same proportionate quantity of air from each zone.

To accomplish the evenness of distribution the supply and return ducts are reduced at each opening to give a tapered appearance. In addition to this, volume dampers are installed on both supply and return openings to permit manual regulation and setting of the air flow through each opening.

SPECIAL CONTROL DESIGN

The conditioned space with its large area of glass and wall exposure presents a problem in control that requires special design.

First of all, two separate supply ducts are provided instead of one main trunk. One duct serves the south half of the factory space and the other serves the north half.

The loads on these two zones will naturally vary during the day. The direct rays of the sun on a bright day at noon-time will increase the load on the south side of the conditioned area considerably above the load on the north side, while on a dull day or in the late afternoon the load on each side might be the same.

This variation in cooling load must be handled by means of a single cooling coil installed in each of the two supply mains. Similarily booster heating coils will have to be installed in the two supply ducts to compensate for the varying heating loads during the winter season. This variation might be caused by either the sun or the wind producing an unequal heat effect on the two zones.

CONTROL SCHEME

The general scheme of the control system will be to allow the conditioner unit to operate at all times for the purpose of circulation, including ventilation, and filtration. During the winter season the steam coil in the conditioner will maintain a minimum discharge air temperature equal to approximately room temperature. The booster or reheat coil in each main supply trunk will perform the actual heating function as required for its particular zone.

A thermostat located at a central point of either the north or the south sections will control the steam supply to the coil for that particular side of the conditioned space.

The same discharge temperature control used to regulate the steam flow to the tempering coil may also be used to control part of the cooling cycle. If, after the steam has been entirely shut off in the tempering coil and the discharge temperature continues to mount, the cooling equipment will be brought into operation with the same control to maintain a definite discharge temperature of not more than 70°.

Thermostats located adjacent to the heating thermostats in each section will control the refrigeration effect in the cooling coil installed in the supply duct to the respective zone.

The foregoing is a typical illustration of one of the methods used for zone control. There are many other methods and some are rather elaborate. In this particular case the layout used will give the necessary degree of closer control required for the problem. Other schemes will be discussed in future application studies.

Vilter to Air Condition Sears Kansas City Store

KANSAS CITY—Vilter Mfg. Co. of Milwaukee has been awarded the contract for air conditioning Sears, Roebuck & Co.'s store here. The installation will have a capacity of 630 tons and will cost more than $120,000.

M. G. Harbula, Wheaton, Ill. is the consulting engineer supervising the project. According to Frank D. Kirk, Vilter general sales manager, 14 freight cars will be needed to haul the 300,000-lb. unit from Milwaukee.

Bader Supply Co. Partially Conditioning Tulsa Hotel

TULSA, Okla.—Air conditioning of three floors and the fountain bar of the Adams Hotel here is being done by Bader Supply Co.

Natkin & Co. expects to complete the air conditioning of the third floor of Vandever's Dry Goods Co. early in June.

Palmer House to Air Condition 160 Guest Rooms As First Step towards Complete System

CHICAGO—First step in a $1,000,000 installation which will provide year-around air conditioning for every part of the Palmer House hotel here will be undertaken in June when an air-conditioning system, cooling 160 deluxe guest rooms, will be installed.

Edward T. Lawless, general manager, has announced that the system will be extended later to include 2,248 guest rooms, six public dining rooms, three bars, 20 private meeting and dining rooms, two ballrooms, and more than 60 stores and shops located in the Palmer House building.

"When completed, the installation will cost nearly $1,000,000 and will entirely equip the Palmer House," said Mr. Lawless. "This will cover 21,500,000 cu. ft. of space to be air conditioned.

"This year's work will see the Grand Ballroom, Red Lacquer room, their attendant foyers, the exhibition hall, 20 private meeting and dining rooms, 160 guest rooms, street-level stores and their arcades, and several other spaces completely air conditioned."

A large part of the system will be ready for operation by June 1, declared Mr. Lawless, and other sections will be placed in service as soon as construction work permits.

Charles L. Leopold, consulting engineer, designed the system.

The Palmer House manager explained that when the entire hotel is provided with summer and winter air conditioning, "finger-tip" control will be possible in each room.

"Every dining room, guest room, public space, and store will be provided with one or more thermostatic control devices. Hence, any guest in his room, waiter, captain, or store proprietor can readily adjust air conditions by merely turning a knob," he stated.

"The Palmer House system is not designed for merely cooling air, a common misconception of the term 'air conditioning,'" Mr. Lawless continued. "On the contrary, all conditions such as temperature, moisture content, cleanliness, proper distribution, absence of drafts, and elimination of street and room noises have been carefully worked out to provide maximum comfort and healthfulness during all seasons."

The completed construction project will require a cooling unit weighing 50 tons, he added, which will develop 870 tons of refrigeration capacity. A 1,000-hp. electric motor will power the compressor.

"To produce cooled air, the machine will refrigerate water as a cooling medium," said Mr. Lawless. "Water will then be pumped to fan units at various points of utilization throughout the hotel in its own closed system, requiring a pumping capacity of 2,000 gallons per minute."

Present installation work will be a continuation of a unit-type system for year-around air conditioning now operating in the Petit Cafe of the Palmer House and other rooms.

Air Control's Part in Increasing Efficiency Of Human Body Told

BALA-CYNWYD, Pa.—Air conditioning's part in increasing the efficiency of the world's most perfect engine—the human body—was described by Miss Margaret Ingels, Carrier Corp.'s woman engineer, in a lecture before the Bala-Cynwyd Woman's Club.

The human body, Miss Ingels said, "acts very much the same internally as an automobile engine, except that it has a million cylinders and is air-cooled."

Air conditioning in the home, theater, restaurant, office, and other enclosures has done much to improve the health of the human being and increase the efficiency of that "wonderful mechanism—his body—by air cooling it at the rate required for normal physiological actions," she added.

A fuller life in the home has been made available through air conditioning for the same reason that workers in air-conditioned factories and other places are more happy and healthful, Miss Ingels said. She noted that engineering science today has made possible to the homeowner, through economies and research, equipment that would have been prohibitive in cost a few years ago.

A graduate of the University of Kentucky, Miss Ingels obtained her Master's degree in engineering from Kentucky after three years' work in air conditioning, her thesis being on that subject.

Before joining the Carrier organization, Miss Ingels carried on research work for American Society of Heating and Ventilating Engineers, and did field work for the New York Commission on School Ventilation.

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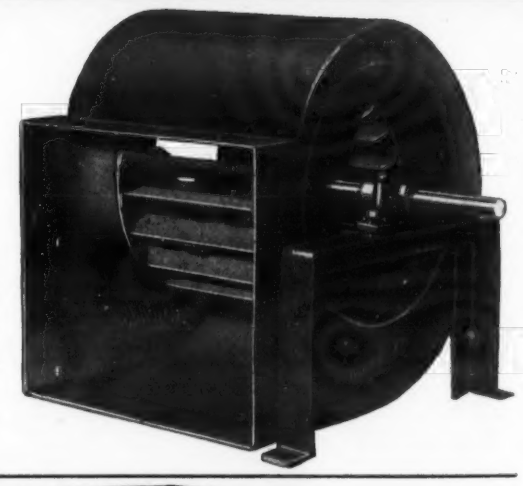

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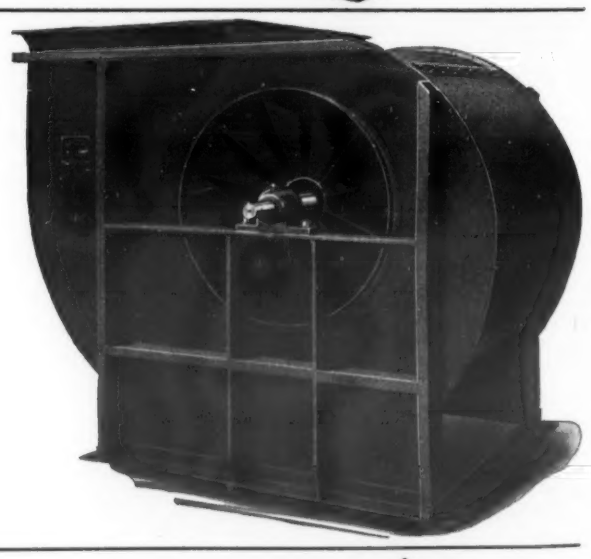

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Literature on any or all of the above units promptly mailed on request.

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Air Conditioning Made Easy

By F. O. Jordan

Noise in Air-Conditioning Systems; Acceptable Levels and Sources

SECTION 13

Noise Control

Necessity

The air-conditioning industry is no exception to the rule that the discovery and development of every good thing must be accompanied by certain troubles previously unrecognized.

One of the unwelcome features attendant upon the development of air conditioning is the malady known as "noise consciousness."

With certain air-conditioning installations in which noise problems were not properly considered, noise consciousness may be excused, for neither monotonous dronings nor roaring winds have a rightful place in the well-ordered home. Of course, the fact must be recognized that the ever-increasing quantity of mechanical equipment in any home tends to result in some degree of noise, which it may be well to accept along with the comforts which such equipment brings.

Often noise consciousness is *not* justified, being merely an unwholesome cohabitation of the super-sensitiveness sometimes developed by higher levels of luxurious living with a desire to establish the right to kick about anything.

Nevertheless, it is a well-recognized fact that equipment which may be a thing of beauty forever, as well as the perfect success in holding temperature and humidity within the comfort zone, should and often will be thrown out in the alley with its creator, if its noise level "gets on the customer's nerves."

Often both manufacturer and dealer-contractor have discovered that it is fully as hopeless a task to reduce unsatisfactory noise levels by means of sporadic "by guess and by gosh" methods, as it is to change a once noise-conscious customer's mind. Probably everyone in air conditioning has longed for definite, easily applied design factors by means of which acceptable noise characteristics may be designed into the air conditioner or the air-conditioning system with the same degree of accuracy that other performance characteristics can be controlled.

The aim of this section is the boiling down into useful facts for the overworked engineer of principals known to scientists.

Facts on Noise

The *intensity* of a noise is the measure of the energy of its pulsations.

The measure of *intensity* is in watts per square centimeter, an intensity of 10^{-16} watts per square centimeter now being generally accepted as the "threshold" of audible intensity for a frequency of 1,000 cycles per second.

The *loudness* level of a noise is the sensation of pressure pulsations of noise as registered by the human ear, or by the "noise meter."

The unit of measure of *loudness* level is called the *decibel* (db) which equals 10 times the $\log_{10}$ of the intensity. Thus the formula for relating loudness and intensity becomes

$LI = 10 \log_{10} R$

Where

LI=loudness increase in db

R=ratio of intensities

Therefore, if the intensity is doubled, the loudness level is raised 3 db, for $10 \log_{10} 2 = 3$; if the intensity is multiplied by 10, the loudness level is raised 10 db ($10 \log_{10} 10 = 10$); if intensity is multiplied by 100, loudness level is raised 20 db ($10 \log_{10} 100 = 20$).

An "ounce of prevention" being more desirable than a "pound of cure," the preferred method of combating noise is to prevent its origination. If this cannot be accomplished, the next best thing is to absorb it by means of some material of good sound-absorbing characteristics.

The measure of sound absorbing qualities is the *sabine,* which is one square foot of totally absorptive surface. A room whose sound absorption quality is 100 sabines, is equal in sound absorption to a room with 100 square feet of inside surface composed of totally absorbing materials. If a room has an inside surface of 1,000 sq. ft. constructed of a material of .1 sabine per sq. ft., the room has an absorption of 100 sabines.

Obviously, the undesirable characteristic of noise is its *disturbing* effect. The disturbing effect of noise increases both with its *loudness level* and with its *frequency.*

However, although frequencies may run above 3,000 cycles, the frequencies lying between 128 and 512 cycles generally are more disturbing than the frequencies above and below this range, because loudness levels generally are much higher within this range.

Fig. 72 shows two "equal disturbance" curves which indicate the effect of frequency and loudness level upon the disturbing effect of noise.

Loudness levels may be measured by the "audiometer" while both loudness levels and frequencies may be measured by special tuning forks, and by frequency analyzing type noise meters, all of which are available on the market.

Curve of Disturbance Effect of Various Frequencies

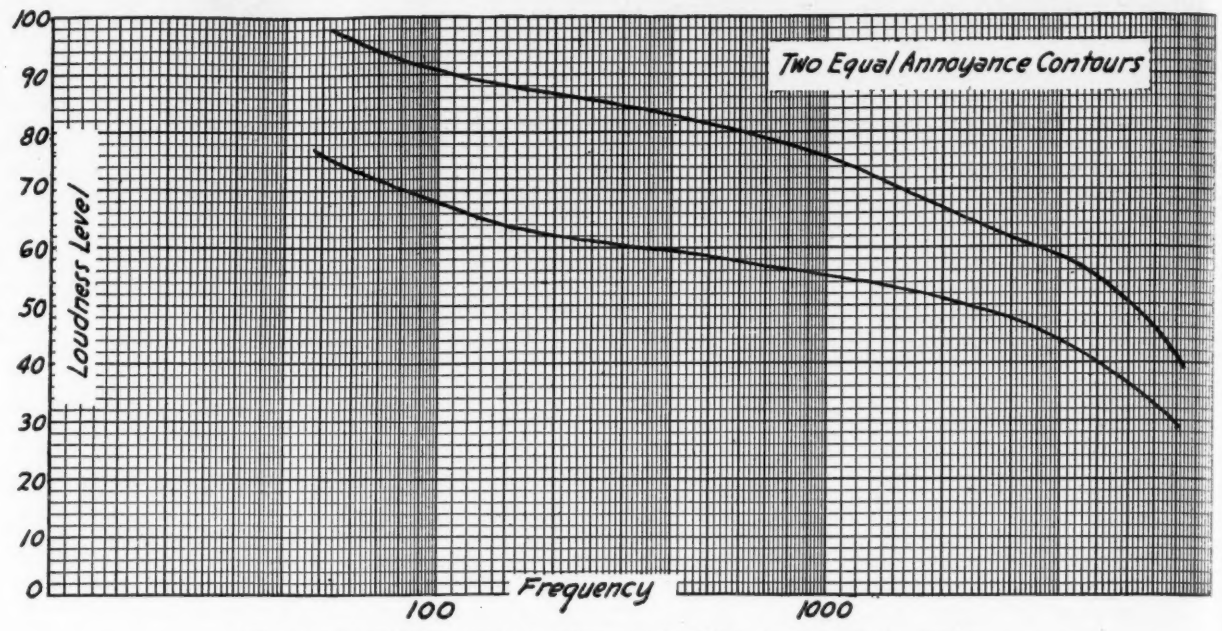

Fig. 72—Loudness level is given in decibels, frequency in cycles.

Acceptable Noise

Before starting in to design for noise characteristics the generally acceptable noise levels should be determined.

The acceptable degree of noise depends largely upon the natural noise levels of the type of occupancy. Table 5 below lists average natural noise levels in various types of occupancies.

An assumption often made in practice is that the equipment noise level should not be higher than the natural noise level of the room which it serves. Such an arrangement would result in raising the room loudness level 3 db, for as described above, doubling the intensity of noise raises loudness level 3 db.

In the case of the installation in which noise should be practically eliminated, it is considered necessary that equipment noise be kept 10 db below the natural room level.

Experience indicates that a *constant* noise level 3 db higher than the natural room level generally is unnoticed, but that if the noise is not constant, as the sound of intermittent fan operation, an increase of more than 1 db is often objectionable.

Fig. 73 may be used for approximating the increase in room noise level resulting from the equipment noise level.

Sources of Noise

Noise in the air-conditioning system may originate in any of the following sources:

(a) The air-conditioning equipment itself as mechanical, electrical, refrigerant, or air noises from motors, fans, compressors, refrigerant lines, etc.

(b) The air-distributing system of ducts, as wind noises due to friction or burbulence or as drumming and rattling of sheet metal.

(c) The discharge grilles.

Noise may be transmitted into the room by any or all of the following three ways:

(a) Through the air.

(b) Through the building structure.

(c) Through ducts.

(d) Made within the room by grilles.

(*Concluded on Page 21, Column 1*)

Table 5—Natural Noise Levels

	Loudness Level in Decibels Min.	Ave.	Max.
Sound Film Studios	10	14	20
Radio Broadcasting Studios	10	14	20
Planetarium	15	20	25
Residence Apartments, etc	25	35	40
Theaters—Legitimate	25	30	35
Theaters—Motion Picture	30	35	40
Auditoriums, Concert Halls, etc.	25	30	40
Churches	25	30	35
Executive Offices—Treated Private Offices	25	33	40
Private Offices—Untreated	35	45	50
General Offices	45	55	60
Hospitals	25	40	55
Class Rooms	30	35	45
Libraries, Museums, Art Galleries	30	40	45
Public Building—Court Houses, Post Offices, etc.	45	55	60
Small Stores	40	50	60
Upper Floors Department Stores	40	50	55
Stores—General—Including Main Floor Department Stores	50	60	70
Hotel Dining Rooms	40	50	60
Restaurants and Cafeterias	50	60	70
Banking Rooms	50	55	60
Factories	60	70	80
Office Machine Rooms	60	70	80
Railroad Coach	60	70	80
Pullman Car	55	65	75
Automobile	50	65	80
Vehicular Tunnel	75	85	95
Airplane	80	85	100

Noise Level Increase

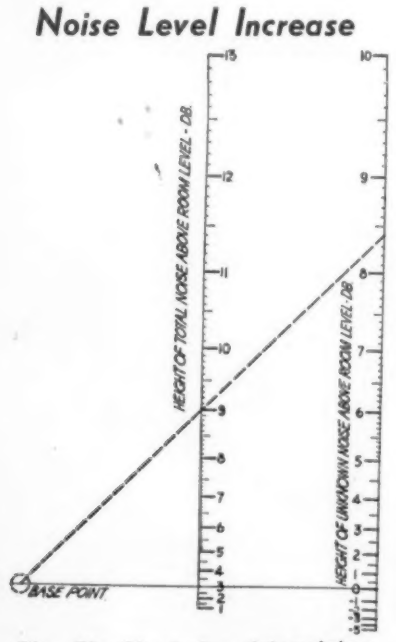

Fig. 73—Chart for determining increase in room noise level due to addition of system noise.

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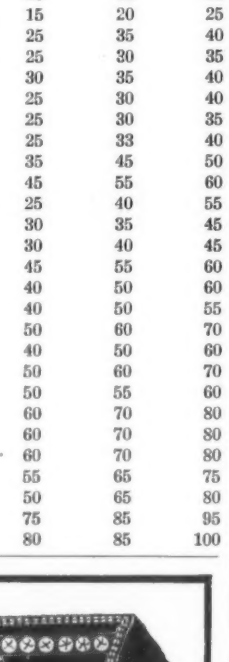

When a straight-sided V-belt bends around its pulley there is tension on the top of the belt and compression on the bottom. This makes the side walls bulge outward—as shown in figure 1, below.

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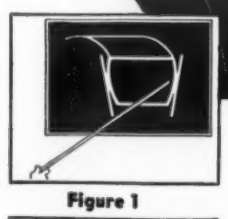

Figure 1

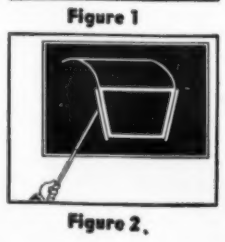

Figure 2.

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Points to Observe in Avoiding Noise; Sound Insulating Materials

(*Concluded from Page 20, Column 5*)

Since it may be both difficult and expensive for even the sound expert to engineer away the noise created by improperly designed or constructed equipment, particular attention should be given by the designing and fabrication engineer to good principles of design and workmanship before the acoustical engineer even appears upon the scene.

Careful observance of the following points may avoid throwing away profits for noise-cures.

(a) Use only motors which are designed for quiet operation. Avoid brushes wherever possible, generally using squirrel-cage or condenser-type motors.

(b) Use fans of ample size, operating at low speeds guaranteed as quiet by the manufacturer. Generally safe speeds for various types of service are listed in Section 10.

(c) Use ample air passages which will allow air velocities below those productive of noise, and avoid all sudden turns and transformations of a type productive of noise. Properly designed and sweep sheets often help by eliminating eddies and obtaining smooth air flow.

(d) Brace and stiffen by "paneling," by "standing seams," or by structural members, all large areas of ducts or panels so that resonance and diaphragmatic response are eliminated.

(e) Insulate fans and motors from other parts by means of elastic air connections and rubber, springs, or other vibration-resisting mountings.

(f) Avoid very tight or loose bearings, shaft "end play," loose thrust washers, very loose or tight belts (tight belts are a common offender because of resultant strain on shafts and bearings), proper alignment of shafts, bearings and pulley faces, poor balance of all rotating parts, or poorly fitted or loose joints, and poor workmanship in general.

(g) Never use a noisy circuit-breaker type of control in or near a quiet room.

(h) And do not forget *good lubrication.*

Characteristics of Sound Insulating Materials

In addition to its ability to absorb noise or insulate against it, the ideal material for use for sound-absorption must possess a considerable degree of the following characteristics:

(a) Must be insect and vermin-proof —must not be palatable to rodents.

(b) Must be moisture-proof, and not subject to deterioration from exposure to dampness.

(c) Must be fire-resisting, or at least slow-burning.

(d) Must be of light weight, and of a character which makes it easily held or fixed in place. Incidentally, lightness is necessary for good sound absorbing quality.

(e) Must have a fair degree of strength and resiliency, especially if it is to be used as an insulation for equipment foundations or supports.

(f) Must be of a permanent nature so that it retains its original characteristics, must not sag nor "pack down" from age or vibration.

Noise Through Building Structure

A certain amount of noise and vibration tends to be transmitted to building structure through direct contact with the mechanical elements of the air-conditioning units or equipment. Even with well-balanced equipment, this condition generally will be objectionable.

For this reason mountings must be provided for all mechanical elements of such a nature that they serve as filters which do not permit the passage of vibratory frequencies of greater than one half of the natural vibration period of the equipment (generally assumed to be 100 cycles per second for air-conditioning equipment).

In the case of compressors, motors, or fans which rest directly upon the building construction, the insulation generally is placed between the construction and the base or foundation of the equipment.

In the case of the complete air-conditioning unit, such mechanical elements should be provided with insulation which isolates them from the structure of the air-conditioning unit itself.

In all cases great care must be taken that no rigid conduit, pipe or supporting bolts are so installed that the vibration can short-circuit past the insulation, or the effect of the insulation will be neutralized.

Also, when providing insulation for elements which are joined by belt-drives, such as fans and motors, such elements must be rigidly connected together so that they form one unit, which then must be treated as such when installing the insulation. If this is not done, the flexibility of the insulation will destroy the alignment of the drives and so result in noise and other obvious troubles.

Merely providing an insulating pad under the entire base of the equipment frequently is worse than useless because the light loading of the insulation results in a vibration period which is close to the natural period of the machine.

For good results, the area of the insulating pad should be selected so that the resultant loading is near the safe maximum loading for the material as recommended by its manufacturer, or approximately as given in Table 6.

The above compliance values are per 1 sq. in. area of insulation 1 inch thick. Compliance is inversely proportional to area, and directly proportional to thickness.

Insulating pads may be merely placed under foundations or may be interspaced between specially constructed members of wood or other material, resting on special saddles arranged to prevent direct contact.

Since the period of vibration of the insulated machine is reduced by increase in "sprung" or insulated weight as well as by the elasticity or the resiliency of the insulation, a heavy concrete foundation frequently is placed between the machine and the insulation. This is a further advantage also of the arrangement mentioned above regarding the treating of the fan and motor as one rigidly inter-connected unit because for a given vibratory force, less insulation is required for the heavier loading.

Generally, following the above procedure is productive of satisfactory results. However, if desired, the frequency of the machine upon its insulating pad may be computed by the relationship

$$\text{Frequency} = \frac{1}{2\,\text{Pi}} \sqrt{\frac{1}{\text{mass} \times \text{compliance}}}$$

where "mass" is the weight in grams of the load upon the insulation and the "compliance" taken from the above tabulation according to the thickness and the area of the insulating pad.

For good results, the frequency of the insulated machine should not exceed one half the natural frequency produced by the machine, with one fifth as the more desirable ratio. In the absence of other information, the natural period of air-conditioning equipment may be assumed to be 100 cycles per second.

Other types of vibration insulating mountings used are springs. To be effective, the spring should be no more rigid than is necessary for providing the necessary support.

Open-Air-Borne Sound

Some of the noise from the air-conditioning equipment may reach the conditioned space by being carried directly through the air (in addition to that carried through ducts).

If the air conditioner is located directly within the room, such sounds must be absorbed or insulated by lining the cabinet, or the enclosure surrounding the offending elements, with a suitable insulation. If the equipment is located in some other room, the noise may be confined to that room by insulating its walls.

Any air-conditioning unit which is to be used in homes, hospitals, offices, or other locations where noise is undesirable, should be provided with a noise-insulating lining around mechanical elements. This is especially true if the equipment is of the self-contained type in which the compressor is included.

Entire equipment rooms for large air-conditioning equipment may be insulated by lining the interiors or by installing insulation within the walls, floors or ceilings.

Such insulation is available either as rigid sheets or as flexible blankets of varying thicknesses.

For dampening vibrations in cabinets or housings a 1/16 to 1/4-in. thick coat of cement made of ground cork with a binder, or of other similar materials, may be sprayed or brushed in place, or 1/16-in. sheets of pressed felt or similar material may be cemented in place if the construction is sufficiently regular in form.

For cabinet interiors where noise from equipment such as compressors must be absorbed, the usual insulating materials are 1/2-in. to 1-in. thick rigid slabs made of rock or mineral wool with a suitable binder, which are used except for irregular surfaces, where blankets of felt, rock, or mineral wool 1/2-in to 1-in. thick secured to suitable muslin jackets are commonly used.

The rigid insulation described above is used for lining equipment rooms, while the blanket forms are interwoven between studding or joists of the room construction.

Similar insulations are used for insulating ducts.

When selecting sound insulations, thought must be given to other factors besides sound insulation, for such insulations if properly selected and arranged can be made to serve for preventing heat loss and "sweat" or moisture condensation, while linings which can be injured by high temperatures must not be installed in the conditioner which is yet to be passed through the enameling ovens.

When insulating the equipment room, the doors must not be overlooked and all cracks must be sealed.

Average sound absorbing capacities of above typical installations are as given in Table 7.

Table 6—Characteristics of Sound-Absorbing Mountings

Material	Description	Safe Max. Loading (lbs./sq. in.)	Compliance (cm./dyne)
Corkboard	1.1 lb./board ft.	12	0.25×10^{-6}
Corkboard	0.7 lb./ board ft.	8	0.50×10^{-6}
Fibre Board	1.35 lb./board ft.	5	0.60×10^{-6}
Fibre Board	Insulating Board	15	0.12×10^{-6}
Sponge Rubber	25 lb./cu. ft.	2	3.0×10^{-6}
Soft India Rubber	55 lb./cu. ft.	5	1.2×10^{-6}

Table 7—Characteristics of Sound-Absorbing Linings

Insulation	Frequency (cycles per sec.)	Thickness (Inches)	Sound Absorption (Percent)
Mineral or Rock Wool in rigid sheets, Cork, Celotex, etc.	500	1/2	60
		1	65
	1,000	1/2	70
		1	72
Mineral or Rock Wool in flexible blankets	500	1/2	65
		1	82
	1,000	1/2	75
		1	80

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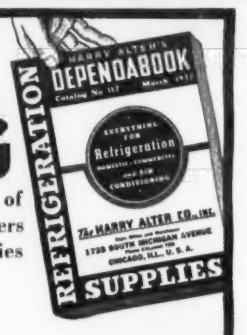

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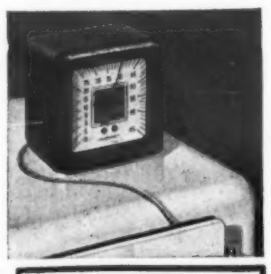

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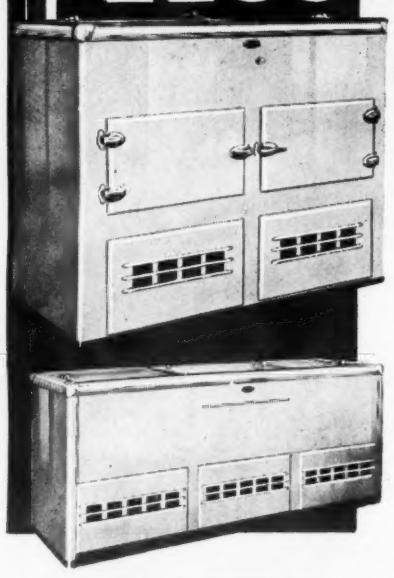

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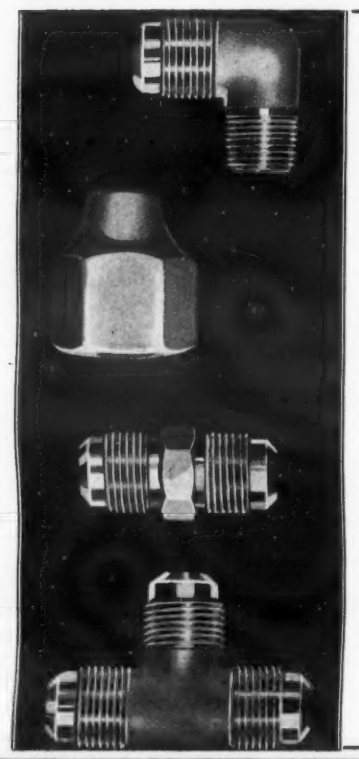

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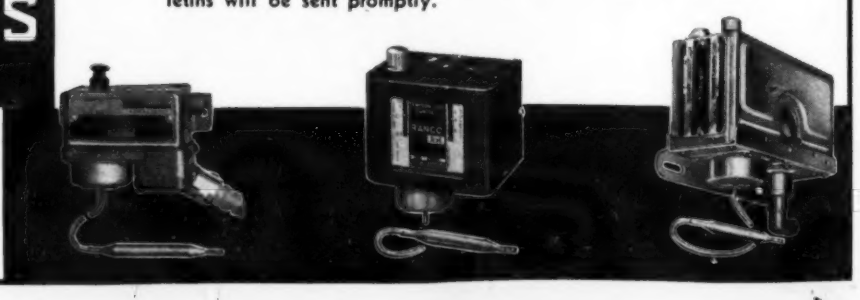

RANCO, Inc.
Columbus, Ohio

Suggestions for Contractors on Operation & Maintenance of Evaporative Condensers

Editor's Note: This is the second of two articles dealing with the evaporative condenser, and discusses the operation and maintenance of such condensers.

Both articles were extracted from a comprehensive study on evaporative condensers made by W. F. Friend, assistant mechanical engineer, and Louis Elliott, consulting mechanical engineer, for Ebasco Services, Inc. (Electric Bond & Share Co.) of New York City. Copies of the full report made by these two companies are not available, since it is printed only for the operating companies of Ebasco Services.

Service Requirements

The usual service requirements of evaporative condensers may be tabulated as follows:

Eliminator plates should be inspected and any dirt or scale accumulations brushed off; surfaces should be painted when necessary to prevent corrosion.

Spray nozzles should be cleaned if clogged or subject to incrustation.

Water-receiving tank should be cleaned regularly and painted when necessary to prevent corrosion; strainers in pump suction and water-supply line require regular cleaning; water-regulating valve requires adjustment to give correct outlet pressure; float valve should be set to maintain slight continuous overflow for sealing pump suction, removing dirt and preventing accumulations of dissolved solids or acidity in spray system.

Finned-coil surfaces should be cleaned to remove any scale deposits, by alternately raising and lowering temperature of coil until scale cracks and can then be removed by brushing, scraping or washing; this involves starting and stopping of fans and sprays and intermittent operation of compressor.

Amount of refrigerant in system should be checked occasionally, by opening test cock on receiver.

Presence of air in refrigerant lines should be determined, by comparing stabilized system pressure and temperature after an overnight shutdown; any air accumulation should be removed by purging.

Lubrication of fan-shaft and motor bearings should be checked, likewise tension and condition of belt drives, alignment of dampers and linkage.

Electrical equipment inspection should cover motor starting switches, fuses, overload and excess-pressure relays, solenoid water valves, etc.

Size of Motors Required

The average motor required for the pumps and fan of the evaporative condenser is given as follows:

* * *

Capacity			Fan Hp.	
B.t.u./Hr.	Tons	Pump, Hp.	Without Ducts	With Ducts
60,000	5	⅛ to ¼	½ to 1	1 to 1½
600,000	50	¾ to 1	10 to 15	10 to 15
240,000	20	⅛ to ½	1½ to 3	3 to 5

* * *

Taking a given installation as an example, the input to the motor driving the fan is given by manufacturer's rating tables as 0.09 kw. Power for compressor used with condenser, based on 2.08 bhp. and 80% motor efficiency, works out at 1.94 kw. Accordingly, total power requirement is 2.03 kw. This unit is of approximately 2 tons capacity.

Power consumption of pumps and fans could be reduced during cool weather by reducing water and air delivery. However, since such reduction results in an increase in condenser pressure, hence in the power consumption of the compressor, there can be no net gain in power consumption except during sub-freezing weather, when spray must be stopped.

Installation Hints

The following installation hints are given for the evaporative condenser.

A. When located out of doors, set so that prevailing winds will blow toward air inlet; so that inlet is not obstructed by adjacent walls; and so that the moist discharge will not strike windows.

B. When located indoors, consider ease of accessibility and shortness and simplicity of duct and tubing connections. When possible, make use of damp discharge for winter humidification and utilize air exhausting power of units for ventilating purposes.

C. Remember that one foot head of Freon equals .55 pounds per sq. in. pressure, so that if condenser is considerably above evaporator, smaller expansion valve parts may be necessary to avoid "flooding" through of liquid refrigerant, and and that if condenser is considerably below evaporator, sufficient sub-cooling must be provided so that the liquid refrigerant leaves the condenser not warmer than the saturation temperature corresponding to the liquid refrigerant pressure remaining at the expansion valve, in order to prevent "flashing" of liquid into gas in the liquid refrigerant line.

D. Wire compressor motor, pump motor, and fan motor so that they operate simultaneously.

E. If compressor is located considerably lower than the condenser, provide means in high pressure gas line of preventing backing up of oil and liquid onto compressor head.

F. Provide a float-valve-controlled water makeup and overflow; set float so that a small overflow occurs at all times to prevent high concentrations of scale-forming residues left by evaporation of water.

G. Air ducts must be well engineered in view of characteristics of fan used.

H. Do not connect compressors or condensers in parallel. In case of multiple installations, arrange so that separate independent refrigerant circuits are formed, one compressor, one condenser, and one evaporator, all of the same capacity, forming each independent circuit; otherwise refrigerant and oil troubles may be expected. One condenser may be divided into more than one circuit by dividing the coil into the proper number of independent sections of suitable size.

Ratings & Performance

Ratings generally are tabulated on the basis of useful refrigerating equipment when used with the condenser being rated.

Since the condenser must dissipate heat resulting from conversion of mechanical energy as well as refrigerating effect, the condenser generally must dissipate between 13,500 and 14,000 B.t.u. per hour per ton refrigerating effect rather than only the 12,000 B.t.u. per hour which constitutes the conventional ton of refrigeration.

To be useful, rating must be tabulated at the useful range of values of the variable factors which determine performance.

These factors are:

A. Wet-bulb temperature of entering air.
B. Condensing temperature.
C. Airflow.
D. Water quantity.
E. Refrigerant used.

Temperature of makeup has no appreciable effect upon performance so that heated water wasted from processes may be used.

Common values for use in setting up comparative standard ratings are 80° F. wet-bulb temperature of entering air and 100° F. condensing temperature. For rating the entire refrigerating system for air-conditioning work, suction temperatures of 40° F. are recommended.

When selecting the evaporative condenser, it is important that the entering air wet-bulb temperature be not underestimated or disastrous head pressures may result.

With the properly designed evaporative condenser, liquid refrigerant generally is sub-cooled below the saturation temperature corresponding to the condensing pressure an amount 5° F. less than the difference between condensing temperature and wet-bulb temperature of entering air.

The average effects upon condenser performance of the controlling variables are as follows:

A. **Wet bulb**—Capacity of compressor-condenser is reduced ½% per degree rise in wet-bulb temperature of entering air, while compressor power consumption rises 1% per degree wet-bulb rise. Specific power consumption of compressor may be said to rise about 1½% per degree rise in wet bulb.

B. **Condensing temperature**—Capacity of condenser rises 4% or 5% per degree F. rise in condensing temperature, but compressor capacity is reduced about ¾% per degree in condensing temperature.

C. **Airflow**—If reasonable excess air is provided above the requirement for evaporation of water, increase in air quantity has little or no effect upon condenser capacity.

D. **Water Quantity**—If ample water is sprayed or circulated to obtain proper coverage of condensing surfaces, increase in water quantity has negligible result.

E. **Refrigerant Used**—Generally the performance with Freon-12 and methyl chloride is identical although one manufacturer claims 20% to 40% more capacity with methyl for one of his models.

With ammonia and sulphur dioxide, capacities are said to be 15% or 20% higher than with Freon. For air-conditioning service, condensing pressures generally are 12% higher for methyl chloride and 75% higher for ammonia than for Freon-12.

When selecting the evaporative condenser for a given compressor, remember that within reasonable limits, the larger condenser raises first and operating costs of the condenser, but reduces operating cost of the compressor and raises the compressor capacity because the head pressure against which the compressor must work is lowered, and that in some cases compressor first cost will be reduced when the rise in compressor capacity permits selection of a smaller compressor and/or motor.

Generally, the most economical selection of compressor and evaporative condenser combination will be the one which results in a balance of about 100° condensing temperature, unless a lower temperature permits the use of a smaller compressor.

Grand Rapids Showroom Ventilated Only by Air Conditioners

GRAND RAPIDS, Mich.—Five air-conditioning units supply the only ventilation in the new windowless, "air-proof" showroom building of Imperial Furniture Co. The building is the first of its type in this city, one of America's furniture centers.

Air is cooled to 52° F. in separate units on each floor by water from specially drilled wells. Walls include an air space of 1½ inch, and have 8-inch insulation on the interior.

Rising 50 feet above the ground, and comprising more than 43,000 sq. ft. of floor space, the new furniture building presents a solid block of masonry unbroken by windows or doors, except for ground-floor entrances. Infiltration of outside air, except through the air-conditioning system, is at a minimum.

No outside light enters the building except from basement kitchen windows, illumination being furnished by indirect artificial lighting.

Principal purpose behind Imperial's air-conditioning installation is to make the building comfortable for furniture buyers, who do most of their marketing during the hot summer months.

Krich-Radisco Exhibit at Newark Show

Kelvinator's 1937 convention air-conditioning panel used by Krich-Radisco, Inc., New Jersey Kelvinator distributor, as a feature of its air-conditioning exhibit at the recent "Own Your Home Show" in Newark. The pretty blonde demonstrator aided in attracting attention to the exhibit.

Newark Distributor's 'Dealer Theater' Is Air Conditioned

By W. H. Long

NEWARK—Using an air-conditioned "Dealer Theater" seating 300 persons as a center for its merchandising promotion activities on Kelvinator products, Krich-Radisco, Inc., Kelvinator distributorship here, has embarked upon a new program of service to its 150 dealers throughout the New Jersey area.

Early last fall, Krich-Radisco celebrated its 29th year in business by opening a new distributing plant at 422-32 Elizabeth Ave., the outgrowth of a small gas supplies shop opened in Newark in 1907 by Harry Krich, present chairman of the board of Krich-Radisco, and father of three sons now associated with him in the business.

On the street floor of this modernistic structure is located a large display floor for the complete line of Kelvinator products and a prominent radio line. Executive and business offices, sales promotion, advertising, and home economics departments, and a service department are situated on both sides and to the hear of the building.

Occupying the entire second floor, of the new building is the "Dealer Theater" which is believed by Paul R. Krich, vice president in charge of sales, to be the only auditorium of its kind now in use by a refrigeration distributorship.

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THE BUYER'S GUIDE

DISTRIBUTORS WANTED

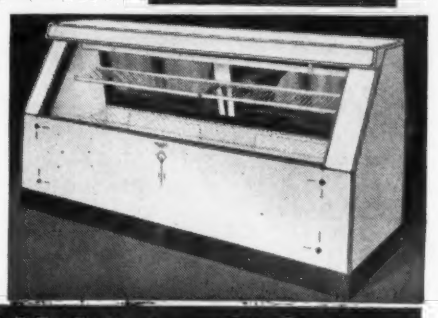
Percival equipment meets every requirement of the modern food store.

For mechanical refrigeration only

Percival's complete line will increase your sales of electrical refrigeration equipment and offer added earnings.

Desirable territories still available. Write for complete information.

1886-1937
51 years of service to meat markets.



C. L. PERCIVAL CO.
DES MOINES, IOWA

TYLER'S WELDED STEEL Cases

● 1937 line offers wide variety and sensational values. 6 big new features and iron-clad guarantee. Only Tyler gives one-piece "welded steel" construction, 100% insulation. Wonderful sales opportunity. Most talked of and fastest selling line on market. WRITE today.

TYLER Sales-Fixture COMPANY
Dept. E, NILES, MICHIGAN

SIX BIG NEW FEATURES

SINCE 1889

The quickest selling case on the market—made possible by its many exclusive features and a complete line. To obtain a large and profitable commercial volume

WRITE FOR DETAILS

LEADING WITH QUALITY

FOGEL REFRIGERATOR CO., PHILA., PA.

A New "Self-Contained" Refrigerator!

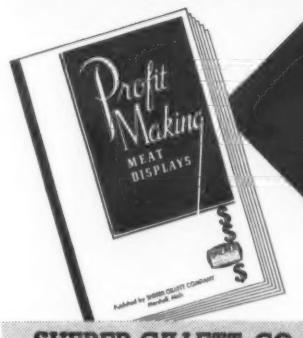
Offering 30 cubic feet of storage space, through the use of modern space saving construction and extra height shelves.

Space is provided for Condensing Unit, and the installation of an Ice Cube Maker, which, when combined with the standard back wall coil, eliminates all danger of a drop in temperature or humidity, no matter how heavily frosted the ice maker becomes.

Model No 30 "Self-Contained" Refrigerator available with solid or glass display doors in top section, choice of gleaming white porcelain, or DuLux finish.

A Similar 6-door Refrigerator—Model No 45—with 45 cu. ft. of storage space is also available. Write for Bulletin SC-3045.

GLOEKLER MANUFACTURING COMPANY
ERIE, PENNSYLVANIA
SALES OFFICE 428 FOURTH AVENUE, PITTSBURGH



ANOTHER HELP FOR Sherer Dealers AND DISTRIBUTORS

"Profit-Making Meat Displays"—a new 32-page booklet tells meat merchants how to get greater profits from their displays.

The Sherer Franchise assures you of complete cooperation from the factory. Write for details about the Sherer Case and Cooler Franchise. Valuable territories still available.

SHERER-GILLETT CO. . . . MARSHALL, MICHIGAN
Display and Storage Equipment for Retail Food Stores

MASS PRODUCTION MAKES THE KOCH ECON-O-CASE POSSIBLE

$10,000.00 could not have bought as good a fixture as an Econ-O-Case a few years ago. Yet today, thanks to modern production methods, Koch has brought the cost of the new Econ-O-Case down to the very lowest price level.

The Econ-O-Case has a welded steel body, insulated with solid CORKBOARD, glazed with three panes of glass. It will display meat, keep meat, and sell meat PROFITABLY.

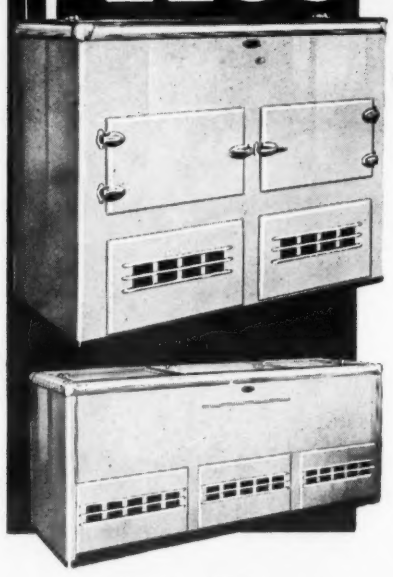
You need more information about the Koch Econ-O-Case.

WRITE KOCH TODAY FOR DISTRIBUTOR PROPOSITION

KOCH REFRIGERATORS
North Kansas City, Mo.
Export Dept., 304 E. 45th, N. Y. City

THE BUYER'S GUIDE

PELCO *makes* **FLOATING ICE** . . . . *and* **SELLS FASTER** *because it* **COOLS FASTER!**



Universally accepted and respected for high quality and economic operation, PELCO is today the most talked of and fastest selling line on the market.

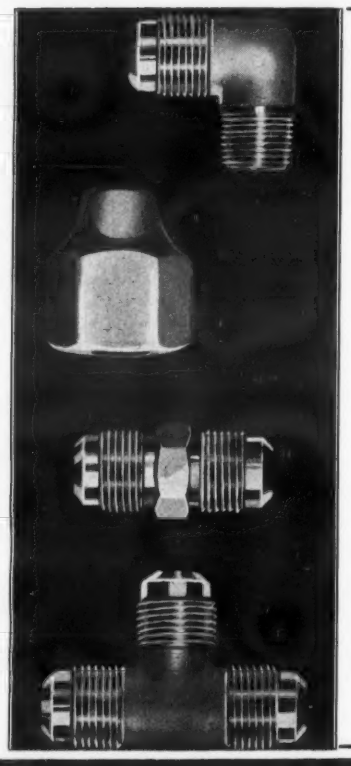
The swing is to PELCO—because it's firs in sales, first in quality, first in profit.

PELCO makes its own floating ice—cools bottled beverages from room temperature to desired degree in 30 minutes.

GET the FACTS on PELCO—get behind it for real PROFIT in '37. Write Dept A-57.

(Above) MODEL 200
(Below) MODEL 240

Refrigerator Division
PORTABLE ELEVATOR MFG. CO.
BLOOMINGTON *Est. 1899* ILLINOIS
Export Dept.:
304 E. 45TH ST., N. Y. CITY Cable Address: CARMUSE—N. Y.



Seepage-Proof
FITTINGS
"Built Right to Stay Tight"

Every style and size of forged flared tube fitting for the refrigeration industry is available from standard stock at Commonwealth.

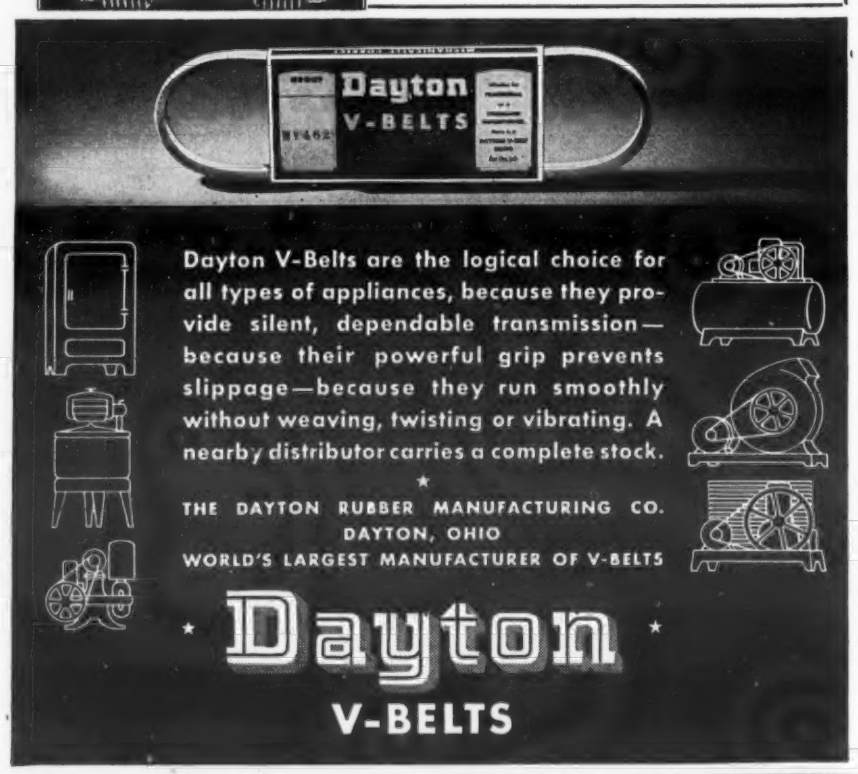
Thousands of semi-standard patterns enable us to quickly furnish any desired variation in pipe and tube ends.

Special fittings made to order.

Commonwealth fittings are correctly designed, carefully machined, and tube seats are protected in shipping.

25 years of service to the industry.

COMMONWEALTH BRASS CORPORATION
Commonwealth at Grand Trunk R. R
DETROIT, MICH.



Dayton V-Belts are the logical choice for all types of appliances, because they provide silent, dependable transmission—because their powerful grip prevents slippage—because they run smoothly without weaving, twisting or vibrating. A nearby distributor carries a complete stock.

★

THE DAYTON RUBBER MANUFACTURING CO.
DAYTON, OHIO
WORLD'S LARGEST MANUFACTURER OF V-BELTS

★ Dayton ★
V-BELTS

Suggestions for Contractors on Operation & Maintenance of Evaporative Condensers

Editor's Note: This is the second of two articles dealing with the evaporative condenser, and discusses the operation and maintenance of such condensers.

Both articles were extracted from a comprehensive study on evaporative condensers made by W. F. Friend, assistant mechanical engineer, and Louis Elliott, consulting mechanical engineer, for Ebasco Services, Inc. (Electric Bond & Share Co.) of New York City. Copies of the full report made by these two companies are not available, since it is printed only for the operating companies of Ebasco Services.

Service Requirements

The usual service requirements of evaporative condensers may be tabulated as follows:

Eliminator plates should be inspected and any dirt or scale accumulations brushed off; surfaces should be painted when necessary to prevent corrosion.

Spray nozzles should be cleaned if clogged or subject to incrustation.

Water-receiving tank should be cleaned regularly and painted when necessary to prevent corrosion; strainers in pump suction and water-supply line require regular cleaning; water-regulating valve requires adjustment to give correct outlet pressure; float valve should be set to maintain slight continuous overflow for sealing pump suction, removing dirt and preventing accumulations of dissolved solids or acidity in spray system.

Finned-coil surfaces should be cleaned to remove any scale deposits, by alternately raising and lowering temperature of coil until scale cracks and can then be removed by brushing, scraping or washing; this involves starting and stopping of fans and sprays and intermittent operation of compressor.

Amount of refrigerant in system should be checked occasionally, by opening test cock on receiver.

Presence of air in refrigerant lines should be determined, by comparing stabilized system pressure and temperature after an overnight shutdown; any air accumulation should be removed by purging.

Lubrication of fan-shaft and motor bearings should be checked, likewise tension and condition of belt drives, alignment of dampers and linkage.

Electrical equipment inspection should cover motor starting switches, fuses, overload and excess-pressure relays, solenoid water valves, etc.

Size of Motors Required

The average motor required for the pumps and fan of the evaporative condenser is given as follows:

* * *

Capacity			Fan Hp.	
B.t.u./Hr.	Tons	Pump, Hp.	Without Ducts	With Ducts
60,000	5	⅛ to ¼	½ to 1	1 to 1½
600,000	50	¾ to 1	10 to 15	10 to 15
240,000	20	⅛ to ½	1½ to 3	3 to 5

* * *

Taking a given installation as an example, the input to the motor driving the fan is given by manufacturer's rating tables as 0.09 kw. Power for compressor used with condenser, based on 2.08 bhp. and 80% motor efficiency, works out at 1.94 kw. Accordingly, total power requirement is 2.03 kw. This unit is of approximately 2 tons capacity.

Power consumption of pumps and fans could be reduced during cool weather by reducing water and air delivery. However, since such reduction results in an increase in condenser pressure, hence in the power consumption of the compressor, there can be no net gain in power consumption except during sub-freezing weather, when spray must be stopped.

Installation Hints

The following installation hints are given for the evaporative condenser.

A. When located out of doors, set so that prevailing winds will blow toward air inlet; so that inlet is not obstructed by adjacent walls; and so that the moist discharge will not strike windows.

B. When located indoors, consider ease of accessibility and shortness and simplicity of duct and tubing connections. When possible, make use of damp discharge for winter humidification and utilize air exhausting power of units for ventilating purposes.

C. Remember that one foot head of Freon equals .55 pounds per sq. in. pressure, so that if condenser is considerably above evaporator, smaller expansion valve parts may be necessary to avoid "flooding" through of liquid refrigerant, and and that if condenser is considerably below evaporator, sufficient sub-cooling must be provided so that the liquid refrigerant leaves the condenser not warmer than the saturation temperature corresponding to the liquid refrigerant pressure remaining at the expansion valve, in order to prevent "flashing" of liquid into gas in the liquid refrigerant line.

D. Wire compressor motor, pump motor, and fan motor so that they operate simultaneously.

E. If compressor is located considerably lower than the condenser, provide means in high pressure gas line of preventing backing up of oil and liquid onto compressor head.

F. Provide a float-valve-controlled water makeup and overflow; set float so that a small overflow occurs at all times to prevent high concentrations of scale-forming residues left by evaporation of water.

G. Air ducts must be well engineered in view of characteristics of fan used.

H. Do not connect compressors or condensers in parallel. In case of multiple installations, arrange so that separate independent refrigerant circuits are formed, one compressor, one condenser, and one evaporator, all of the same capacity, forming each independent circuit; otherwise refrigerant and oil troubles may be expected. One condenser may be divided into more than one circuit by dividing the coil into the proper number of independent sections of suitable size.

Ratings & Performance

Ratings generally are tabulated on the basis of useful refrigerating equipment when used with the condenser being rated.

Since the condenser must dissipate heat resulting from conversion of mechanical energy as well as refrigerating effect, the condenser generally must dissipate between 13,500 and 14,000 B.t.u. per hour per ton refrigerating effect rather than only the 12,000 B.t.u. per hour which constitutes the conventional ton of refrigeration.

To be useful, rating must be tabulated at the useful range of values of the variable factors which determine performance.

These factors are:

A. Wet-bulb temperature of entering air.
B. Condensing temperature.
C. Airflow.
D. Water quantity.
E. Refrigerant used.

Temperature of makeup has no appreciable effect upon performance so that heated water wasted from processes may be used.

Common values for use in setting up comparative standard ratings are 80° F. wet-bulb temperature of entering air and 100° F. condensing temperature. For rating the entire refrigerating system for air-conditioning work, suction temperatures of 40° F. are recommended.

When selecting the evaporative condenser, it is important that the entering air wet-bulb temperature be not underestimated or disastrous head pressures may result.

With the properly designed evaporative condenser, liquid refrigerant generally is sub-cooled below the saturation temperature corresponding to the condensing pressure an amount 5° F. less than the difference between condensing temperature and wet-bulb temperature of entering air.

The average effects upon condenser performance of the controlling variables are as follows:

A. **Wet bulb**—Capacity of compressor-condenser is reduced ½% per degree rise in wet-bulb temperature of entering air, while compressor power consumption rises 1% per degree wet-bulb rise. Specific power consumption of compressor may be said to rise about 1½% per degree rise in wet bulb.

B. **Condensing temperature**—Capacity of condenser rises 4% or 5% per degree F. rise in condensing temperature, but compressor capacity is reduced about ¾% per degree in condensing temperature.

C. **Airflow**—If reasonable excess air is provided above the requirement for evaporation of water, increase in air quantity has little or no effect upon condenser capacity.

D. **Water Quantity**—If ample water is sprayed or circulated to obtain proper coverage of condensing surfaces, increase in water quantity has negligible result.

E. **Refrigerant Used**—Generally the performance with Freon-12 and methyl chloride is identical although one manufacturer claims 20% to 40% more capacity with methyl for one of his models.

With ammonia and sulphur dioxide, capacities are said to be 15% or 20% higher than with Freon. For air-conditioning service, condensing pressures generally are 12% higher for methyl chloride and 75% higher for ammonia than for Freon-12.

When selecting the evaporative condenser for a given compressor, remember that within reasonable limits, the larger condenser raises first and operating costs of the condenser, but reduces operating cost of the compressor and raises the compressor capacity because the head pressure against which the compressor must work is lowered, and that in some cases compressor first cost will be reduced when the rise in compressor capacity permits selection of a smaller compressor and/or motor.

Generally, the most economical selection of compressor and evaporative condenser combination will be the one which results in a balance of about 100° condensing temperature, unless a lower temperature permits the use of a smaller compressor.

Grand Rapids Showroom Ventilated Only by Air Conditioners

GRAND RAPIDS, Mich.—Five air-conditioning units supply the only ventilation in the new windowless, "air-proof" showroom building of Imperial Furniture Co. The building is the first of its type in this city, one of America's furniture centers.

Air is cooled to 52° F. in separate units on each floor by water from specially drilled wells. Walls include an air space of 1½ inch, and have 8-inch insulation on the interior.

Rising 50 feet above the ground, and comprising more than 43,000 sq. ft. of floor space, the new furniture building presents a solid block of masonry unbroken by windows or doors, except for ground-floor entrances. Infiltration of outside air, except through the air-conditioning system, is at a minimum.

No outside light enters the building except from basement kitchen windows, illumination being furnished by indirect artificial lighting.

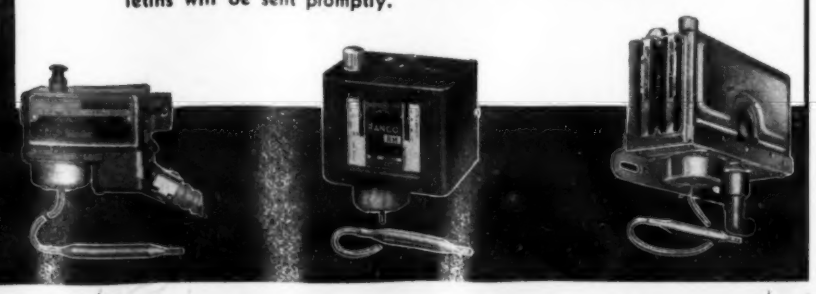
Principal purpose behind Imperial's air-conditioning installation is to make the building comfortable for furniture buyers, who do most of their marketing during the hot summer months.

Ranco
COMMERCIAL CONTROLS

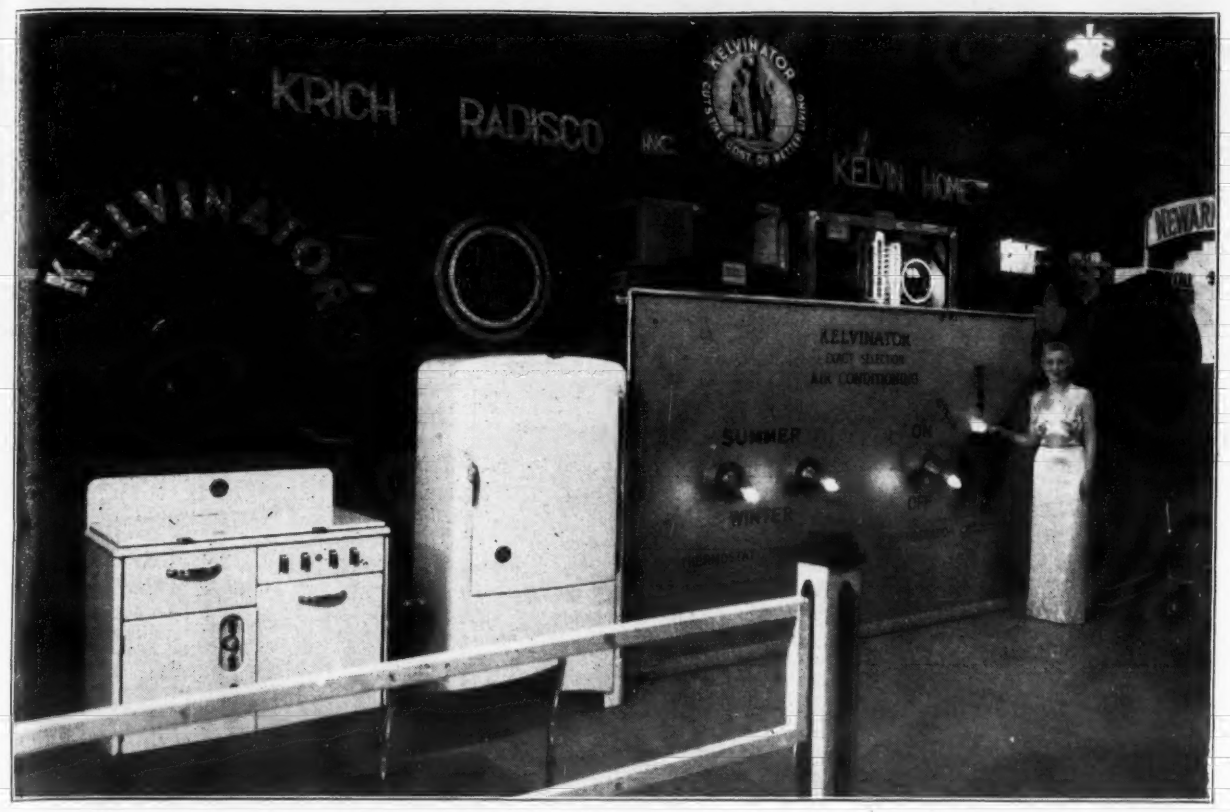
RANCO, Inc.
Columbus, Ohio

STRENGTH, simplicity and complete dependability—these are the qualities demanded of Temperature and Pressure Controls for commercial service. You'll find them all—in the steadily-growing line of Ranco Controls for Air Conditioning, Walk-in Boxes, Display Cabinets, Milk Coolers, Water Coolers, Ice Cream Hardening Cabinets, Steam Boilers and many other installations.

Ranco Commercial Controls offer many important advantages obtainable in no other line. Tell us your needs and bulletins will be sent promptly.



Krich-Radisco Exhibit at Newark Show



Kelvinator's 1937 convention air-conditioning panel used by Krich-Radisco, Inc., New Jersey Kelvinator distributor, as a feature of its air-conditioning exhibit at the recent "Own Your Home Show" in Newark. The pretty blonde demonstrator aided in attracting attention to the exhibit.

Newark Distributor's 'Dealer Theater' Is Air Conditioned

By W. H. Long

NEWARK—Using an air-conditioned "Dealer Theater" seating 300 persons as a center for its merchandising promotion activities on Kelvinator products, Krich-Radisco, Inc., Kelvinator distributorship here, has embarked upon a new program of service to its 150 dealers throughout the New Jersey area.

Early last fall, Krich-Radisco celebrated its 29th year in business by opening a new distributing plant at 422-32 Elizabeth Ave., the outgrowth of a small gas supplies shop opened in Newark in 1907 by Harry Krich, present chairman of the board of Krich-Radisco, and father of three sons now associated with him in the business.

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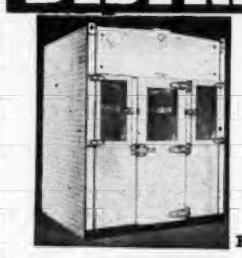

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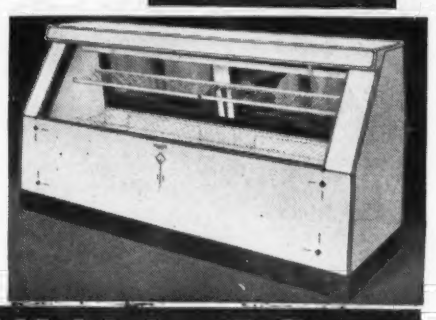
1886-1937
51 years of service to meat markets.



C. L. PERCIVAL CO.
DES MOINES, IOWA

TYLER'S WELDED STEEL Cases

● 1937 line offers wide variety and sensational values, 6 big new features and iron-clad guarantee. Only Tyler gives one-piece "welded steel" construction, 100% insulation. Wonderful sales opportunity. Most talked of and fastest selling line on market. WRITE today.

TYLER Sales-Fixture COMPANY
Dept. E, NILES, MICHIGAN

SIX BIG NEW FEATURES

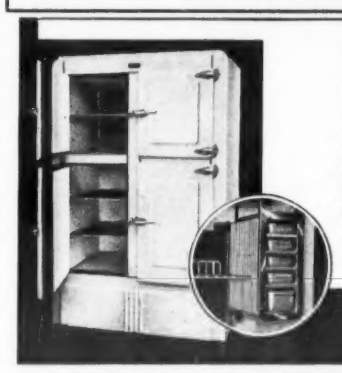
SINCE 1889

The quickest selling case on the market—made possible by its many exclusive features and a complete line. To obtain a large and profitable commercial volume

WRITE FOR DETAILS

LEADING WITH QUALITY

FOGEL REFRIGERATOR CO., PHILA., PA.



A New "Self-Contained" Refrigerator!

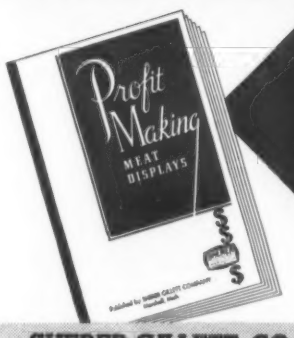
Offering 30 cubic feet of storage space, through the use of modern space saving construction and extra height shelves.

Space is provided for Condensing Unit, and the installation of an Ice Cube Maker, which, when combined with the standard back wall coil, eliminates all danger of a drop in temperature or humidity, no matter how heavily frosted the ice maker becomes.

Model No 30 "Self-Contained" Refrigerator available with solid or glass display doors in top section, choice of gleaming white porcelain, or DuLux finish.

A Similar 6-door Refrigerator—Model No 45—with 45 cu. ft. of storage space is also available. Write for Bulletin SC-3045.

GLOEKLER MANUFACTURING COMPANY
ERIE, PENNSYLVANIA
SALES OFFICE: 429 FOURTH AVENUE, PITTSBURGH



ANOTHER HELP FOR Sherer Dealers AND DISTRIBUTORS

"Profit-Making Meat Displays"—a new 32-page booklet tells meat merchants how to get greater profits from their displays.

The Sherer Franchise assures you of complete cooperation from the factory. Write for details about the Sherer Case and Cooler Franchise. Valuable territories still available.

SHERER-GILLETT CO. . . . MARSHALL, MICHIGAN
Display and Storage Equipment for Retail Food Stores

MASS PRODUCTION MAKES THE KOCH ECON-O-CASE POSSIBLE

$10,000.00 could not have bought as good a fixture as an Econ-O-Case a few years ago. Yet today, thanks to modern production methods, Koch has brought the cost of the new Econ-O-Case down to the very lowest price level.

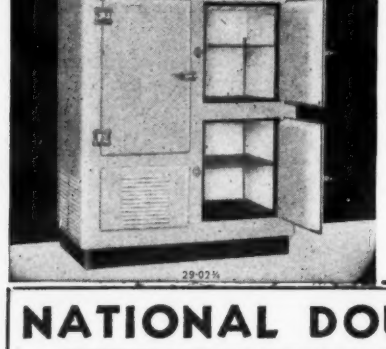
The Econ-O-Case has a welded steel body, insulated with solid CORKBOARD, glazed with three panes of glass. It will display meat, keep meat, and sell meat PROFITABLY.

You need more information about the Koch Econ-O-Case.

WRITE KOCH TODAY FOR DISTRIBUTOR PROPOSITION

KOCH REFRIGERATORS
North Kansas City, Mo.
Export Dept., 304 E. 45th, N. Y. City

THE BUYER'S GUIDE



STREAMLINED Beauty

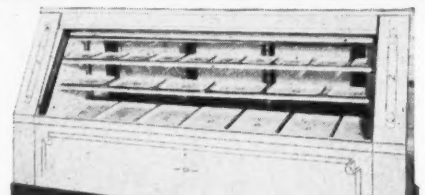
THIS LINE SELLS ON SIGHT

Weber brings the result of 35 years of successful manufacturing experience . . . America's most beautiful line of Refrigerator Cases and Commercial Cabinets. Exclusive territories now open — Complete financing plan

Established 1902 *Cable Address "Weberco."*

WEBER SHOWCASE & FIXTURE CO., INC.
5700 Avalon Boulevard Los Angeles

NATIONAL DOUBLE DUTY CASES



You will sell more double duty cases if you sell the NATIONAL CASES. Every purchaser of a NATIONAL CASE will recommend you another customer because of his satisfaction. NATIONAL CASES are built better, will serve longer, cost less to operate on account of heavy construction, cork insulation. Buy and Sell the best case. NATIONAL discounts allow you larger profits. For literature, prices and discounts write

NATIONAL REFRIGERATOR CO., Philadelphia, Pa.

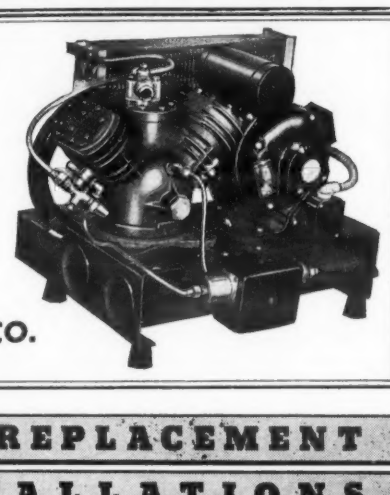
CHIEFTAIN

QUALITY-BUILT COMPRESSORS and CONDENSING UNITS

The CHIEFTAIN line represents precision manufacture and proven service, and is designed for all domestic and light commercial applications.

Sizes range ⅛ to ¾ HP.

Write for prices.



TECUMSEH PRODUCTS CO.
TECUMSEH, MICH.

FOR SERVICE REPLACEMENT & NEW INSTALLATIONS

M&E Bare Compressors and complete units, available with or without motors and controls, meet every need of the Assembler or Service Company with high quality, moderately priced.

One, two and four cylinder models for SO-2, CH_3CL and F-12. ⅛ h.p. to 20 h.p.

Write for new catalog — a valuable reference

MERCHANT & EVANS COMPANY
Philadelphia, Pa., U.S.A. Plant at Lancaster, Pa.

GIBSON

Get Our Prices on Condensing Units

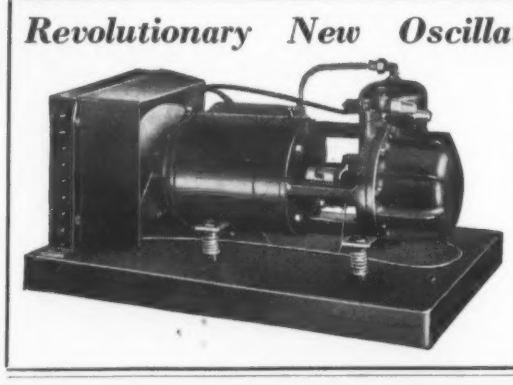
For All Commercial Purposes

¼ H.P. to 15 H.P.

Air Cooled Water Cooled

Gibson Electric Refrigerator Corporation
Greenville Michigan

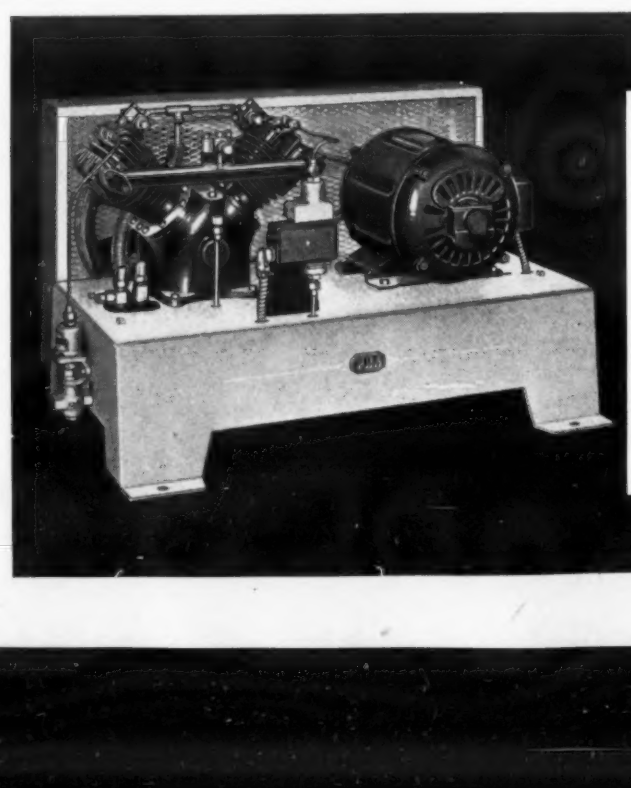
Revolutionary New Oscillating Compressor!



A life-saver for manufacturers not making their own units! Here's the opportunity for Service Companies to save their customers money and give them a new up-to-minute unit at a lower cost than repairing the old one!

Write for Prices and Details!

O'Keefe & Merritt Co.
3700 E. Olympic Blvd.
Los Angeles, Calif.



PAR WATER COOLED HIGHSIDES

PAR water cooled highsides are made in ten popular models, 1/3 to 10 horse power motor size. Employing the most advanced engineering design for high capacity and long life.

Multiple cylinders of large capacity insure very low operating speeds. Sizes 1/3 to 1 horse power are two cylinder pumps. Sizes 1½ to 10 horsepower are V type four cylinder pumps.

All water cooled models are equipped with finned tube and shell condensers, having a radiation surface of 25 square feet to each horse power. Large finned surface reduces water consumption.

A finned tube super heat remover is used between compressor and condenser, which reduces the gas temperature before entering the condenser, greatly inceasing efficiency.

The water valves are rigidly mounted to the base, requiring minimum of piping. All units completely wired ready for installation. Motors equipped with cooling fans.

MODERN EQUIPMENT CORPORATION
DEFIANCE · OHIO · U·S·A

FOR THE SERVICE MAN

Service Instructions on 1934 Montgomery-Ward Machines

BY K. M. NEWCUM

Editor's Note: The following article covering service operations on the 1934 model Montgomery-Ward household electric refrigerator is written by K. M. Newcum, author of the MASTER HOUSEHOLD REFRIGERATION SERVICE MANUAL.

Since the systems used in practically all makes of household electric refrigerators are of the general types described in the MASTER HOUSEHOLD REFRIGERATION SERVICE MANUAL, Mr. Newcum simplifies the problem of describing the service complaints and service operations by referring the reader to those parts of the MANUAL which cover the service problems and service operations for the type of system involved.

Mr. Newcum has also compiled service information on other yearly models of the Montgomery-Ward electric refrigerator, and all of this information will probably be compiled into a "Manual on Specific Makes and Models of Household Electric Refrigerators."

Fig. 1 illustrates the refrigerant circuit in the Montgomery Ward 1934 refrigeration systems.

By carefully following this circuit and noting the design of the system, the following will be found:

The compressor is of standard reciprocating design, equipped with shut-off service valves one and two. The liquid receiver is equipped with liquid line shut-off valve No. 3

An automatic expansion valve controls the flow of refrigerant into the evaporator and the operating back pressure. With this arrangement, a thermostat is used to control the evaporator-refrigerator temperature.

This system would then be properly classed as a standard type "3A" system and service instructions, complaints and operations, given for type "3A" in MASTER HOUSEHOLD REFRIGERATION SERVICE MANUAL, should be followed.

The Montgomery Ward 1934 single-cylinder compressor was of the eccentric type. A non-rotating bellows seal is employed. It is held tightly in place by a large hex nut. The bronze seal nose faces on a hardened and ground shoulder on the shaft.

The piston is equipped with two rings near the top of the piston. Piston pin is of the full floating type. A piston valve is employed, the details of which may be noted in Fig. 2. Note both the old and new valve assemblies as illustrated. Either valve is accessible by removing the slotted head cap screws that hold the valve cover in place.

Discharge valve assembly is shown in Fig. 3. Valve reed 3938-L flexes or moves slightly between the seat and valve retainer during normal operation when only gas and very small (normal) quantities of oil are being passed through the valve.

When liquid or oil is forced through the valve, valve safety springs allow valve retainer to move upward to provide the increased passage necessary to pass liquid or oil.

With all of the parts including the posts removed from the plate, it may be lapped on a conventional lapping block.

The twin-cylinder compressor is of the same general design as the single cylinder and its features will not be repeated.

Detroit Lubricator No. 672 automatic expansion as illustrated in Fig. 68, MASTER HOUSEHOLD REFRIGERATION SERVICE MANUAL, was used as standard factory equipment.

A Tag Snapon controller model R-8 as shown in Fig. 4 is used to control the temperature. On position number one the thermostat with the bulb properly clamped to a rear tube of the evaporator should cut out at about 19° F.

The thermostat should cut in when the temperature at the bulb location has reached between 28° and 31°, or just before the evaporator starts to defrost. To lower cut-in point, turn the differential adjusting screw "D", Fig. 4, to the right, using a thin bladed screw driver.

SO_2 is the refrigerant used and the correct charge is 1¼ lbs.

Model 425 Ward refrigerator should operate at 4 to 5 inches of vacuum while models 650 and 750 operate at 5 to 6 inches of vacuum. However, this may vary slightly and general rules for adjusting expansion valves, as given in Chapter 5, MASTER HOUSEHOLD REFRIGERATION SERVICE MANUAL, should always be followed for best results.

New Catalog Shows Use Of Flexible Metal Hose

MAYWOOD, Ill. — Chicago Metal Hose Corp. has just issued a new catalog telling a how-when-and-where picture story on the advantageous use of flexible metal hose.

Technical data is given on the use of flexible metal hose for saturated and superheated steam, for the conveyance of fluids and chemicals, as vibration absorbers for compressors, and several other special applications.

Latest developments in flexible metal hose design and construction are illustrated, and the company lines of Rex-Weld and Rex-Tube tubing are treated comprehensively as a reference guide to those using either or both types of tubing.

Discharge Valve Assembly

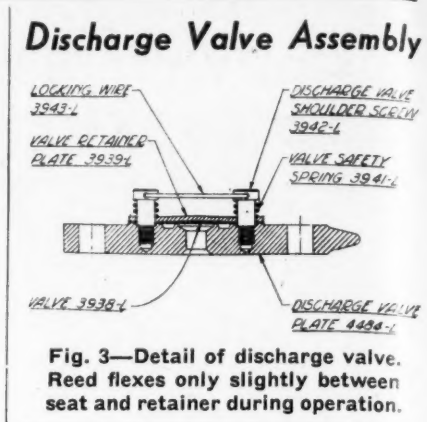


Fig. 3—Detail of discharge valve. Reed flexes only slightly between seat and retainer during operation.

Tag Control

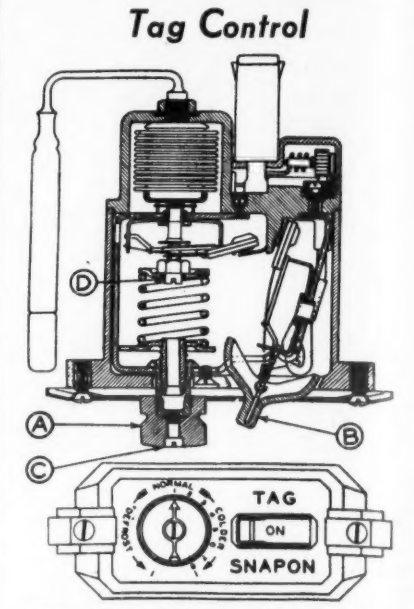


Fig. 4—Tag Snapon thermostatic controller model R-8 controls box temperature.

McCord Markets New Sealing Compound

DETROIT—"Titeseal," a sealing compound for all types of joint and gasket work, is being marketed by McCord Radiator & Mfg. Co.

It is flexible and non-hardening and comes either in cans or in tubes. It is not affected by refrigerants or most any other kinds of liquids, McCord engineers claim.

Titseal is not affected by temperatures, and it is said it will not dry out, shrink, crack, or crumble at 250° F. or —35° F. It can be used with flare fittings or any type of a joint made in a refrigeration system.

Cutler-Hammer Opens New Office in Dallas

DALLAS — Cutler-Hammer, Inc., Milwaukee manufacturer of electric control apparatus, has opened a new sales office here. This office will handle sales of the complete Cutler-Hammer line, and will carry a stock of standard equipment.

Refrigeration Cycle

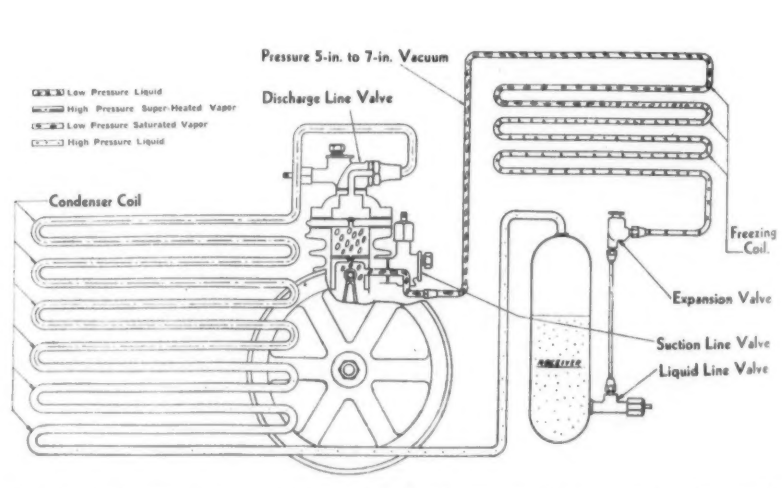


Fig. 1—Refrigeration cycle in 1934 Montgomery-Ward condensing unit. Compressor is of standard reciprocating design with two service valves. Control is by means of an automatic expansion valve and a thermostat.

Details of Piston Valve

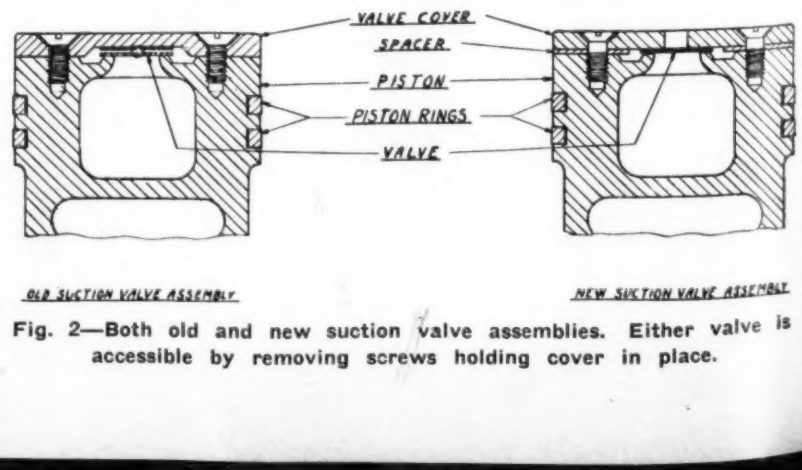


Fig. 2—Both old and new suction valve assemblies. Either valve is accessible by removing screws holding cover in place.

SUPPLY JOBBERS

Any of the following refrigeration supply jobbers will take your order for a subscription to Air Conditioning and Refrigeration News (one year, $4.00) or for copies of these popular books: The Master Household Refrigeration Service Manual (in 3 parts, $1.00 each part); 1936 Refrigeration and Air Conditioning Specifications (512 pages, plus a 64-page supplement giving specifications data on 1937 household refrigerators, $3.00); The Refrigeration Engineer's Manual (224 pages, price $3.00). Foreign countries, 50¢ extra for each book.

A. E. Borden Co.
145 High St., Boston, Mass.
Refrigeration Supply Co.
100 Washington St., Brookline, Mass.
Westville Electric Co.
89 Goffe St., New Haven, Conn.
Service Supply Co.
241 Water St., Binghamton, N. Y.
Root, Neal & Co.
178 Main St., Buffalo, N. Y.
Sid Harvey, Inc.
236 Main St., Hempstead, L. I., N. Y.
Aetna Supply Co.
407 E. 152nd St., New York, N. Y.
Harry Alter Co.
161 Grand St., New York, N. Y.
Federal Refrigerator Corp.
57 E. 25th St., New York, N. Y.
T. W. Binder Co.
29 S. Orange Ave., Newark, N. J.
Melchior, Armstrong, Dessau Co., Inc.
601 W. North St., Baltimore, Md.
Victor Sales Corp.
2222 Arch St., Philadelphia, Pa.
Wm. M. Orr Co.
1228 Brighton Rd., Pittsburgh, Pa.
Williams & Co.
901 Pennsylvania Ave., N. S., Pittsburgh
Radio Service Co.
50 Hazle St., Wilkes Barre, Pa.
Refrigeration Supply Co.
1647 W. Broad St., Richmond, Va.
M. D. Patterson Co.
119 Courtland St., S. E., Atlanta, Ga.
Williams & Co.
Henry & Dunlap Sts., Cincinnati, Ohio.
Debes & Co.
1249 E. 105th St., Cleveland, Ohio.
Harry Alter Co.
4506 Prospect Ave., Cleveland, Ohio.
Refrigeration Supplies Distributor
2223 Chester St., Cleveland, Ohio.
Williams & Co.
1748 E. 22nd St., Cleveland, Ohio.
Hughes-Peters Electric Co.
178 N. Third St., Columbus, Ohio.
F. H. Langsenkamp Co.
229 E. South St., Indianapolis, Ind.
W. C. Du Comb
6335 Palmer Ave., East, Detroit, Mich.
J. M. Oberc, Inc.
904 W. Baltimore, Detroit, Mich.
Young Supply Co.
1050 W. Baltimore, Detroit, Mich.
Shand Radio Specialties
203 W. Kearsley St., Flint, Mich.
Refrigeration Specialty Co.
955 N. 26th St., Milwaukee, Wis.
W-M Refrigeration Co.
2468 N. Third St., Milwaukee, Wis.
Airo Supply Co.
2726 N. Ashland, Chicago, Ill.
B-Line Refrigerator Parts
8038 S. Racine, Chicago, Ill.
H. W. Blythe Co.
2334 S. Michigan Ave., Chicago, Ill.
Borg Warner Service Parts
2100 Indiana, Chicago, Ill.
H. Channon Co.
133 N. Wacker Dr., Chicago, Ill.
Standard Refrigeration Parts Co.
5101 W. Madison Ave., Chicago, Ill.
Harry Alter Co.
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4611 N. Western Ave., Chicago, Ill.
7821 Stony Island Ave., Chicago, Ill.
2315 Washington, St. Louis, Mo.
Brass & Copper Sales Co.
2817 Laclede Ave., St. Louis, Mo.
The Spangler Co., Inc.
3331 Market St., St. Louis, Mo.
R. E. Thompson Co.
1538 Tower Grove Ave., St. Louis, Mo.
Burstein-Applebee Co.
1012 McGee St., Kansas City, Mo.
The Spangler Co., Inc.
633 St. Charles Ave., New Orleans, La.
Refrigeration & Industrial Supply
422 S. Seventh St., Minneapolis, Minn.
Thermal Service Co.
2490 University Ave., St. Paul, Minn.
Republic Electric Co.
116 E. First St., Davenport, Iowa.
C. L. Percival Co.
11th & Cherry Sts., Des Moines, Iowa.
Refrigeration Supply Co.
359 Wesley Way, Sioux City, Iowa.
United Supply Co.
207 N. 16th St., Omaha, Nebr.
Ruegg Refrigeration Supply Co.
245 S. 11th St., Lincoln, Nebr.
Macklanburg Brass & Copper Products Co.
111 N. W. 23rd St., Oklahoma City, Okla.
Beckett Electric Co.
2118 Griffin St., Dallas, Texas.
Refrigeration Supply Co.
2019 Commerce St., Dallas, Texas.
Westbrook Carburetor Electrical Co.
301 S. Main St., San Antonio, Texas.
Refrigerating & Power Specialties Co.
1007 E. Burnside Ave., Portland, Ore.
Refrigeration Service, Inc.
3109 Beverly Blvd., Los Angeles, Calif.
Refrigeration Supplies Distributor
222 N. Vermont Ave., Los Angeles, Calif.
Refrigeration Parts Exchange
3214 Beverly Blvd., Los Angeles, Calif.
Hinshaw Supply Co.
1319 J St., Sacramento, Calif.
California Refrigerator Co.
1077 Mission St., San Francisco, Calif.
Davis Automatic Controls Co.
145 Wellington St., W., Toronto, Ont., Can.
Modern Household Appliances, Ltd.
1106 Beaver Hall Hill, Montreal, Can.
Suministros, Frigorificos, Ltda.
Maria Diaz de Haro 48-50, Bilbao, Spain.
F. C. Lovelock, Ltd.
235 Clarence St.
Sydney, N.S.W., Australia
J. Russell Hancock, Ltd.
49 Courtenay Place
Wellington, New Zealand.
Refrigeration Supplies, Ltd.
49 Courtenay Place
Wellington, New Zealand.
New Zealand Express Bldg.
Fort St., Auckland, New Zealand.
Ahmed A. Fazelbhoy
New Queen's Road, Bombay, India.
55 Canning St., Calcutta, India.

RSES to Set Uniform Charges in Columbus

COLUMBUS, Ohio.—Uniform service charge and regulations will be one of the first rulings put into effect by the local chapter of the Refrigeration Service Engineers' Society, recently organized by 25 leading domestic and commercial refrigeration service men.

Officers of the chapter are: L. E. Mack, president; D. G. Little, vice president; R. E. Yaeger, secretary; Paul Shapiro, treasurer; L. B. Laing, sergeant-at-arms.

Installation Permit Fees Proposed in Jackson

JACKSON, Mich.—Installation of air-conditioning and refrigeration systems in this city would be subjected to a permit fee of $2 for valuations up to $1,000 and $2 for each additional $1,000 under a proposal made by Building Inspector C. A. Hoag.

Mr. Hoag's recommendation was made to City Manager Isaac R. Ellison in response to the city manager's request that all city department heads make reports on how operating expenses might be cut 20%. It is believed that Mr. Hoag's proposal would raise sufficient additional revenue to make his department self-supporting.

Gilmer Lists Replacement Belts in New Catalog

PHILADELPHIA—The L. H. Gilmer Co. has just issued a new 126-page catalog and data book on replacement belts for electric refrigerators, washing machines, beer pumps, oil burners, woodworking machines, water pumps, and miscellaneous appliances.

Published in two sizes, a standard 8½x11-inch book for jobbers and a 3½x6½-inch size for dealers and salesmen, the catalog shows complete listings of units in addition to model numbers, manufacturers part numbers, and the size of belts recommended.

Rackliffe Opens Service Dept. in Hartford

HARTFORD, Conn.—A Kelvinator service and parts department has been opened here by Rackcliffe Bros. Co., Inc. of New Britain, Conn., Kelvinator distributor for Connecticut and western Massachusetts.

5 Washers, 2 Ironers In New Crosley Line

CINCINNATI — Crosley Radio Corp.'s 1937 line of home laundry equipment, introduced recently, includes three new models of electric washers, two gasoline-engine washers, and two electric ironers. Streamline design and a number of mechanical refinements characterize the new models.

Electric washer models are in three sizes, with 18-gallon, 20-gallon, and 25-gallon tubs. Gas-engine units, for use on farms where electricity is not available, are in 20 and 25-gallon sizes.

All models are finished in white enamel, and are equipped with the Lovell pressure cleansing safety wringer.

Motors are of the life-time lubricated type, of rugged construction, with a patented sealed ball-bearing driving mechanism, and gears fit closely to eliminate play and insure smooth, quiet operation.

Gas-engine washers are powered with Briggs & Stratton ½-hp., 4-cycle air-cooled engines, and are operated by a downward push on the foot pedal, which starts both washer and wringer.

A new invertible type agitator is used on some of the models, and is said to permit fast washing of either heavy loads or a few pieces. As its name indicates, the agitator may be operated with the fins either at the top or bottom. Another feature is the electrically operated drain pump on the electric washers, which may be assembled in the field as an accessory.

The two ironers also embody new design and construction features, being equipped with full automatic knee and fingerprtip control, and having self-aligning chromium ironing shoe. Ironing roll, of rust-proof steel, is 26 inches long and 6 inches in diameter.

All models are finished in white enamel, and one, the H719, has two thermostatic controls with variable heat indicator. Lightweight cabinet cover with aluminum top is also provided, so that the ironer may be kept covered when not in use. The top may also be used as a table for finished work.

Backing the washers is a guarantee which provides that the dealer shall be reimbursed for service work necessary within the guarantee period. Crosley's washer department is in charge of William T. White.

SUPPLY JOBBER ACTIVITY

New Ansul Distributors Named for 13 Cities

MARINETTE, Wis. — Appointment of 13 refrigeration parts jobbers as distributors of Ansul Chemical Co.'s sulphur dioxide and methyl chloride refrigerants has been announced by H. V. Higley, secretary of the company.

The jobbers are:

Automatic Heating-Cooling Supply Co., Chicago; Reynolds Brown Co., Little Rock; Republic Electric Co., Davenport, Iowa; Gustave A. Larson Co., Rockford, Ill.; Evansville Supply Co., Evansville, Ind.; South Bend Supply Co., South Bend, Ind.; Motor Supply Co., Monroe, La.; Beals-McCarthy-Rogers Co., Buffalo; Hughes-Peters Electric Corp., Columbus, Ohio; Macklanburg Brass & Copper Products, Inc., Oklahoma City; Oakland Refrigeration Supply Co., Pittsburgh; Buford Brothers, Chattanooga and Nashville, Tenn.; and Lewis Supply Co., Memphis, Tenn.

1937 Airo Supply Catalog Released to Trade

CHICAGO—Airo Supply Co., refrigeration and air-conditioning supply jobber, has just issued an 86-page catalogue describing its line for 1937.

Additions to Airo's stock include: Copeland condensing units, Kay & Ess refrigerator lacquers and paints, Peerless evaporators and controls, methylene chloride refrigerant for Grunow units, porcelain refrigerator accessories, and Ranco commercial controls.

Langsenkamp Establishes South Bend Warehouse

SOUTH BEND, Ind.—F. H. Langsenkamp Co., Indianapolis refrigeration supply jobber, has established a warehouse here to serve northern Indiana and western Michigan.

Service men and distributors in the territory served by the new branch were invited to attend a party held in connection with the warehouse's opening.

Langsenkamp also has announced addition of Henry Dekker to its Indianapolis organization.

Beckett Electric Issues 60-Page Catalog

DALLAS — The Beckett Electric Co., Inc., wholesale jobber firm here, has just issued a new 60-page catalog covering the complete line of refrigeration parts, supplies, and accessories which it carries.

Titled catalog No. 46, the booklet gives complete specifications and price lists on all products.

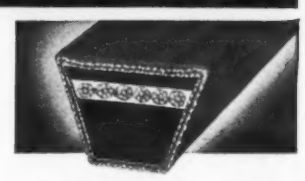
Grainger Lists Products In New Catalog

CHICAGO—W. W. Grainger, Inc., refrigeration supply jobber and wholesale distributor of motors and electrical and hardware supplies, has published a new refrigeration catalog listing all the products sold by the company.

Each item is illustrated, and is accompanied by brief copy, specifications, and price.

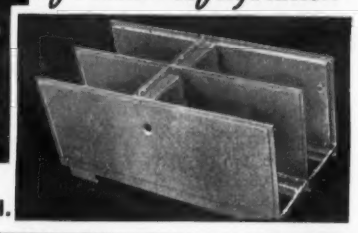
THE BUYER'S GUIDE

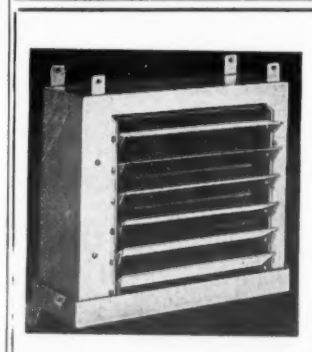
TYLER'S WELDED STEEL REACH-IN BOX
SALES SENSATION OF 1937
Big waiting market for food stores, restaurants, bakeries, tap rooms. New principle "Stratosphere" coiling. Maximum efficiency and capacity in small floor space. Dealers report tremendous demand. Big sales opportunity. Write today.
43 CUBIC FT. NET CAPACITY
TYLER Sales-Fixture COMPANY
DEPT. EX. NILES, MICHIGAN

GET A Gilmer V-BELT
• FULL SIZE • FULL WIDTH • FULL THICKNESS

A GILMER BELT IS NEVER SKIMPED
L. H. GILMER CO., Tacony, Philadelphia
"THE OLDEST FIRM OF RUBBER FABRIC BELT SPECIALISTS"
Will not turn over in the groove. Lasts longer — Runs quietly under pulsating compressor loads. Send for free catalog.

PRECISION PISTONS

FOR YEARS ONE DIVISION at our factory has been devoted exclusively to compressor Pistons. Our men are specially trained in this type of work. Let us quote on your Piston requirements.
SPENCER-SMITH MACHINE COMPANY HOWELL, MICH.

KOLD-HOLD ICE CREAM CABINET CONVERSION UNITS
Modernize old equipment . . provide much greater storage space for packaged goods . . eliminate brine leaks and attendant odors . . reduce weight and simplify installation . . require a minimum of service . . provide ideal temperatures under all conditions . . cost less to operate . . quickly and easily installed in any standard cabinet at small cost.
As Outstandingly Superior as the KOLD-HOLD System of Truck Refrigeration

Write for Complete Facts
KOLD-HOLD MFG. CO. - LANSING, MICH.


UNIT BLOWERS
Pipe Coils
Air-Conditioning Coils
FIN COILS
5/8" — 3/4" — 1"
Steel or Copper
REMPE COMPANY
340 N. Sacramento Blvd. Chicago, Illinois
REMPE

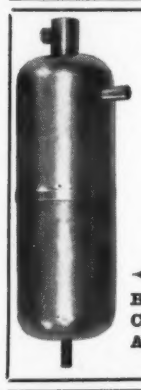
ICE CREAM CABINETS
The Most Complete Line of Ice Cream Cabinets in the Industry
BUY YOUR CABINETS DIRECT FROM THE MANUFACTURER
With or without compressors. Will operate using either Freon, Methyl Chloride or Sulphur Dioxide
WRITE OR WIRE FOR YOUR CATALOG TODAY
Schaefer MINNEAPOLIS MINNESOTA Est. 1929

Send for BIG FREE CATALOG in color
BIG PROFITS for DEALERS
Sell the New WINTER AIR SELF CONTAINED AIR CONDITIONED DISPLAY CASES AND REFRIGERATORS
EQUIPPED WITH WESTINGHOUSE HERMETICALLY SEALED UNITS
EASY TO SELL—EASY TO INSTALL.

5 YEAR WARRANTY
WINTER AIR PRODUCTS CORP. MERCHANDISE MART CHICAGO, ILLINOIS.

THE BUYER'S GUIDE

D for CONTROL
SQUARE D EVERYWHERE
SQUARE D COMPANY
REGULATOR DIVISION, DETROIT, MICHIGAN
WESTERN DIVISION, LOS ANGELES, CALIFORNIA
SQUARE D COMPANY, CANADA LTD., TORONTO, ONTARIO



RECEIVER TANKS—COMPRESSOR BASES—MOTOR MOUNTING BASES—AND OTHER STAMPINGS AND ASSEMBLIES FOR REFRIGERATION AND AIR CONDITIONING.

Our Receiver Tanks are made with drawn shells. Assembly by Hydrogen Brazing produces tanks chemically clean and free from dirt. Can furnish tanks painted if desired.

← Brazed in Controlled Atmosphere

Acklin

THE ACKLIN STAMPING CO.
TOLEDO, OHIO
Chicago, Ill.
Detroit, 2-165 Gen. Motors Bldg.

PURO
ELECTRIC WATER COOLERS
Thoroughly reinforced all steel attractively finished cabinets.
Complete line of different Models and Capacities.
Write for details and sales prices.
Puro Filter Corporation of America
440 Lafayette Street, New York City Spring 7-1800

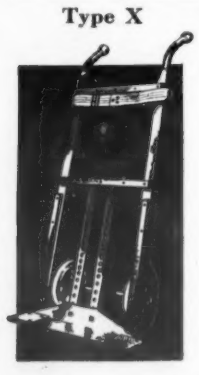
Cordley ELECTRIC WATER COOLERS

A complete line of both pressure and bottle types

THERE'S a large and profitable market for water coolers ready and waiting. The Cordley line is ideal for reaching that market . . . the cabinets simple in design, attractive and compact . . . the cooling mechanism efficient, dependable and trouble-free. Best of all, Cordley coolers are easy to sell . . . for they are inexpensive in first cost and easy on the electric bill. Generous margin of profit to dealers. Ask us for full information. Cordley & Hayes, 141 Hudson St., N.Y.

WATER COOLERS SINCE 1889

Type X



DELIVER YOUR REFRIGERATORS ON RUBBER
The DAYTON CARRIER TRUCK
Will not mar — Speeds delivery
Type X - 53" long — Type Y - 70" long, both with 8 inch rubber tired wheels. Fitted with movable foot or with permanent wide foot for skirted bottom cabinet.
Type X with one strap and either foot - $21.00
Type Y with one strap and either foot - $22.50
f. o. b. Dayton
Write for Bulletin
INTERNATIONAL ENGINEERING INC.
Dayton, Ohio 407 S. Dearborn St., Chicago, Ill. 15 Park Row, N. Y.

HIGHEST Filtrine EFFICIENCY
WATER COOLERS
COMMERCIAL — AIR CONDITIONING
From 2 gals. per hour to 500 gals. per minute
WATER FILTERS — STEEL PIPE COILS — SURGE TANKS
FILTRINE MFG. CO., Brooklyn, N. Y.

TYPE EA

Electrimatic
SOLENOID VALVES
Write for our catalog describing refrigeration and air conditioning controls available in sizes and types to suit your requirements.
THE ELECTRIMATIC CORPORATION
2100 INDIANA AVE., CHICAGO, ILL.

New McCall Kitchen & Test Rooms Opened

NEW YORK CITY—"McCall's" magazine has opened its new McCall kitchens and test rooms, occupying the entire 39th floor of the building at 444 Madison Ave. here.

Experimental work in foods and cookery methods is carried on in two of the group of three kitchens. One of the kitchens is a U-shaped all-electrically equipped room, the other, built in an L-shape, features a gas range and refrigerator.

Adjoining these is a smaller home-sized kitchen in which food which is to be photographed for the magazine or service booklets is prepared.

An equipment test room and a laundry testing room complete the group of work centers. In addition to a reception room and large conference room, the new McCall kitchens and test rooms also include offices for Demetria Taylor, head of McCall's kitchens; Faye I. Hamilton, equipment editor; Kathleen Robertson, home research editor; Gertrude Lynn, assistant editor, and their respective staffs of assistants.

New Kansas Sales Tax Basis for Sales Drive

WICHITA, Kan.—The 2% Kansas sales tax which becomes effective June 1 is being used as the basis of a drive being conducted by 140 Frigidaire dealers in the Wichita area to build up May sales.

In their advertising and sales campaigns, dealers are pointing out that purchase of a refrigerator costing $150 before June 1 will result in a saving of $3. Two pages of the **Wichita Eagle** were recently used by dealers to stress this sales story.

PATENTS

Issued April 27, 1937

2,078,295.—PIPED AIR-CONDITIONING AND HEATING SYSTEM. Charles J. Thatcher, New York, N. Y. Application March 21, 1936, Serial No. 70,019. 18 Claims. (Cl. 257—8)

2,078,334. BLOWER. Joseph A. Martocello, Philadelphia, Pa. Application March 28, 1935, Serial No. 13,464. 2 Claims. (Cl. 230—143)

2,078,343. REFRIGERATING MECHANISM. John R. Replogle, Detroit, Mich., assignor, by mesne assignments, to Copeland Refrigeration Corp., Mount Clemens, Mich. Application Feb. 23, 1933, Serial No. 658,219. 2 Claims. (Cl. 62—116)

2,078,429. REFRIGERATING APPARATUS. Ralph L. Tweedale, Washington, D. C., assignor, by mesne assignments, to General Motors Corp. Application April 14, 1932, Serial No. 605,169. 9 Claims. (Cl. 194—9)

2,078,445. RESILIENT SUSPENSION FOR MECHANICAL UNITS. Harvey D. Geyer, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich. Application Aug. 3, 1934, Serial No. 738,180. 3 Claims. (Cl. 248—22)

2,078,508. REFRIGERATING APPARATUS. Lawrence A. Philipp, Detroit, Mich. Application Aug. 14, 1934, Serial No. 739,746. 2 Claims. (Cl. 62—3)

2,078,540. AIR-CONDITIONING SYSTEM. Ernest B. Miller, Annapolis Roads, Md. Application Oct. 31, 1933, Serial No. 696,069. 17 Claims. (Cl. 257—8)

2,078,740. CLEANING DEVICE FOR COIL SYSTEMS. Emil Stahl, Jersey City, N. J. Application Aug. 6, 1935, Serial No. 34,881. 2 Claims. (Cl. 225—13)

2,078,766. UNIT HEATER. Walter L. Mack, Chicago, Ill., assignor, by mesne assignements, to Air Devices Corp., Chicago, Ill. Application Oct. 26, 1935, Serial No. 46,906. 3 Claims. (Cl. 257—137)

2,078,833. AIR CONDITIONER. Willis Bonner, Duncan, Okla. Application Feb. 8, 1936, Serial No. 62,999. 6 Claims. (Cl. 261—92)

REISSUES

20,341. HUMIDIFIER. Edward S. Lea, Morrisville, Pa., assignor, by mesne assignements, to George Von Seebeck, New York, N. Y., trustee. Original No. 1,979,630, dated Nov. 6, 1934, Serial No. 664,300, April 4, 1933. Application for reissue Dec. 5, 1934, Serial No. 756,123. 3 Claims. (Cl. 261—91)

DESIGNS

104,322. DESIGN FOR A REFRIGERATOR CABINET. David Chapman, Chicago, Ill. Application Feb. 5, 1937, Serial No. 67,473. Term of patent 14 years.

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

5,000 Attend 3-Day El Paso Show

EL PASO, Tex. — Approximately 5,000 visitors attended the three-day refrigeration show sponsored by the Electric Refrigeration Bureau of El Paso, and held in the salesroom of El Paso Electric Co. At close of the exhibition, a 4-cu. ft. unit was given as attendance prize.

Dealers cooperating in the show were:

Central Furniture Co. (Crosley); Colonial Furniture Co. (Crosley); E. O. Cone Co. (General Electric); El Paso Electric Co. (Kelvinator and Hotpoint); Household Appliance & Music Mart (Grunow); Ideal Furniture Co. (Gibson); Imperial Furniture Co. (Gibson and Westinghouse).

Lavis Furniture Co. (Crosley); Peterson Lumber & Paint Co. (Stewart-Warner); Popular Dry Goods Co. (Norge); Sears, Roebuck & Co. (Coldspot); Union Furniture Co. (Frigidaire); Welch Furniture Co. (Frigidaire and Westinghouse); W. G. Walz Co. (Frigidaire); Welch Furniture Co. (Frigidaire and Sparton).

Chicago Utility Building Demonstration Home

CHICAGO—An all-electric model home, featuring the latest developments in domestic electrical conveniences and appliances, is being constructed here by the Commonwealth Edison Co. and will be opened for public inspection in June.

Exterior construction of the house, which is to be located at West 63rd and South Sangamon streets, will follow the design of a Cape Cod cottage, with modern architectural modifications incorporated.

An all-electric kitchen, and a completely equipped electrical laundry will be features of the house. It will be constructed to show the correct methods of wiring for home lighting, as well as for each electrical appliance.

New departures in decorative lighting will include picture and tapestry lighting, and illuminated book shelves and china closets.

Electrolux Issues 14 Broadcasting 'Plugs'

NEW YORK CITY—A series of 14 one-minute announcements, enacting scenes from daily life, and designed to stress the sales features of Servel Electrolux gas refrigerators, has been prepared in record form by Servel, Inc., for radio presentation.

In each announcement there is a time allowance of from five to 10 seconds in which the announcer can present the dealer's name and any other additional information the dealer may wish to include.

The 33-in. double-faced record carries seven announcements on each side, and can be played on the lateral reproducing equipment owned by every radio station.

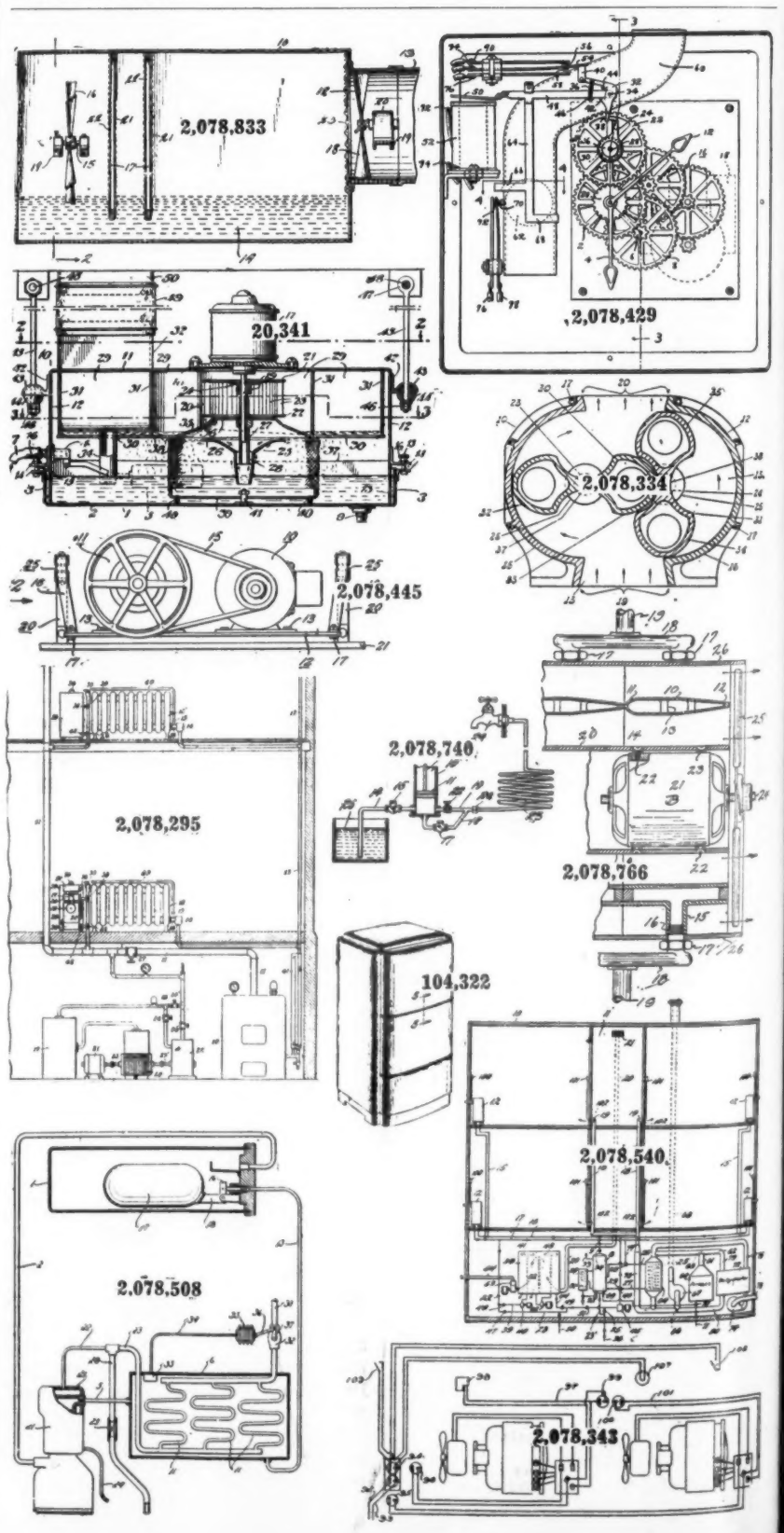
Unit Running 6 Years Helps Clinch Sales

DENVER—An electric refrigeration unit which has been running continuously for more than six years, with no service except lubrication and other ordinary maintenance, is used as a traffic stimulator and sales clincher in the local store of Sears, Roebuck & Co.

The unit has been removed from its original refrigerator and has been placed in a partially glass-enclosed display case in the center of the refrigeration department. The condenser is suspended in the open beneath the case in which the motor is located.

Over the display is a 2 x 2-ft. blackboard on which a clock dial has been drawn. At the top of this slate is the notation: "Started Sept. 15, 1931." Number of hours of continuous running time is kept posted in the center of the clock dial.

To hesitant refrigerator prospects the store's salesmen point out that the unit's six years of continuous operation really represent 24 years of actual use in the home, where the unit should run only approximately one-fourth of the time.



CLASSIFIED ADVERTISING

RATES: Fifty words or less, one insertion, $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning and Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

SALES REPRESENTATIVES: To sell domestic electric refrigerator to appliance, furniture, department, and hardware stores. One size only. Different from every product on market. Has two cubic foot humidified vegetable compartment. Oversized, cold storage compartment, making seventeen pounds of ice at one freezing. A new product of oldest refrigeration company in America, established in 1849. Commission basis only. All U.S. territory open except Pacific Coast, Nebraska, Iowa, Minnesota, Wisconsin, Michigan, northern Ohio, New York, northern New Jersey, New England. Will consider only experienced representatives, thoroughly familiar with outlets in their territories. Give complete details of experience, territory actually covered, manufacturers represented, references. THE JEWETT REFRIGERATOR CO., Buffalo, N. Y.

POSITION AVAILABLE for—experienced engineer with old established manufacturer to take charge of design and production of domestic refrigerators and display counters. Must be Canadian citizen or British subject. Write giving references and full details of experience and qualifications to Box 925, Air Conditioning and Refrigeration News.

EXCELLENT OPPORTUNITY for all around shop men capable of managing service shop specializing in complete rebuilding of hermetically sealed units. State qualifications and salary desired. Box 927, Air Conditioning and Refrigeration News.

ENGINEER capable of instructing students on real air conditioning in New York's largest practical school. Must be capable of developing and writing theory in full as well as teaching in practical way. Steady year round position to right man. Write, giving full details. BOX 410 —AETNA ADVERTISING AGENCY, 1560 Broadway, New York City.

POSITIONS WANTED

CONTROL ENGINEER seeks connection with manufacturer who recognizes possibilities in simplified, low-priced refrigerant control devices. Inventive ability, broad background in design, development, and production of controls. I. E. WIEGERS, 9335 S. 54th Court, Oaklawn, Ill.

COMMERCIAL, HEATING, and air conditioning sales engineer, now managing small air conditioning business wants similar position in Northwestern or Northeastern United States. Box 929, Air Conditioning and Refrigeration News.

EXPORT ENGINEER, Japanese, 39, for automotive, refrigeration, radio, etc., technical and merchandising. Have refrigerator manufacturing knowledge. Formerly representing well known automobile manufacturer in Orient. Widely traveled and well acquainted with market and people. Seeks new connection with outstanding organization offering future. Now employed by large electrical products distributor. Box 930, Air Conditioning and Refrigeration News.

EQUIPMENT WANTED

USED ELECTRIC dehydrating oven, charging board, Bristol recorders, 16 inch swing lathe and other shop equipment. Give full description, condition, and price wanted. Box 928, Air Conditioning and Refrigeration News.

EQUIPMENT FOR SALE

MAJESTIC SURPLUSES. 1,000 complete units "as is" $15.00. New Majestic capacitor motors $4.50. Evaporators $4.00. Copper condensers $1.25. Electrolytic condensers 75¢. Two hour test cabinets with air lifts and Bristol recorders. Set of five $37.50. Cost $400. 3/16" tinned copper tubing 20¢ lb. G & G COMPANY, 5801 Dickens, Chicago.

TWIN CYLINDER and single cylinder Methyl compressors, brand new. Ideal for domestic and small commercial installations. Also fans, pulleys, expansion valves, fittings, recording instruments, receiver valves, and condensers. Priced at fraction of cost. A few ⅛ H.P. A.C. single cylinder complete condensing units. Discontinuing our refrigeration department. Box 914, Air Conditioning and Refrigeration News.

ATTENTION service men, dairies, and refrigeration dealers. I have the following equipment for sale. Coils: 59 T.F. at $15.00; 110 T.F. at $8.00; 112 T.F. at $10.00; 117 T.F. at $12.00. These are just some of the household coils. They are all new Frigidaire. Also a lot of commercial coils. State type you wish and we will try to fill for you and give price if desired. Also have some Model Y compressors completely reoperated like new—$60.00. Have some Models C.N. and also smaller compressors. Prices on request. Frigidaire, Wagner, and Century ⅛ H.P. 110-220 60 cycle motors fully rebuilt, while they last $5.00 each. All orders must be accompanied with small deposit. Balance Sight Draft. Goods will be shipped freight charges collect. No charge for crating. REFRIGERATION SURPLUS JOBBERS, 5622 Woodland Ave., Cleveland, Ohio.

DEALERS ATTENTION! We have hundreds of used and reconditioned electric refrigerators and household and commercial units of nationally known makes from ⅛ to 2 horsepower, at real low prices for resale. Zerozone refrigerators $10.00 each. Copelands $12.50. Write for information. MACKLAM REFRIGERATOR SALES CORP., 220 W. Huron St., Chicago, Ill.

REPAIR SERVICE

MAJESTIC AND GRIGSBY-GRUNOW refrigerator and radio parts service. We have purchased all of the original Grigsby-Grunow Majestic refrigerator and radio parts service. We are the only original, the only genuine, the only direct factory parts and service anywhere in the world. Beware of inferior replacements and parts. Everything we sell is factory guaranteed. Send for prices and dealerships. G & G GENUINE MAJESTIC REFRIGERATOR & RADIO PARTS SERVICE, 5801 W. Dickens Ave., Chicago.

MAJESTIC — GENERAL ELECTRIC — SERVEL hermetic units repaired and exchanged. Majestic—$20.50—General Electric—$25.00—Servel—$18.50 F.O.B. our factory. One year unconditional guarantee. Every unit undergoes complete tests for temperature, cycling, wattage consumption and quietness on genuine test equipment. See our advertisement this issue under "Buyer's Guide". REFRIGERATION MAINTENANCE CORP., 365 E. Illinois St., Chicago, Ill.

DOMESTIC REFRIGERATION controls repaired. Ranco pencil types $1.75, all others, $2.00. All work unconditionally guaranteed for six months. Jobs completely refinished. Prompt service. UNITED GAUGE AND INSTRUMENT CO., 436 West 57th St., New York City.

GENERAL ELECTRIC and Majestic hermetically sealed units repaired and exchanged. Guaranteed work. Wholesale prices quoted f.o.b. Chicago. AMERICAN REFRIGERATING ENGINEERS, INC., 2257 Silverton Drive, Chicago, Illinois.

CONTROLS REPAIRED for the refrigeration and air-conditioning trade. Any make, almost any type. Every control individually calibrated. Steam traps, packless valve glands, and regulators repaired. If it contains a bellows, Halectric can repair it. Service prompt, prices right, guarantee reliable. HALECTRIC LABORATORY, 1793 Lakeview Road, Cleveland, Ohio.

HERMETIC UNITS REPAIRED and exchanged—Majestic $18.50—Westinghouse $25.00—Gibson $18.50—General Electric $25.00—all model household units. Prices F.O.B. our factory—six months guarantee. Complete machine shop service on all makes domestic and commercial. ALLIED REFRIGERATION PRODUCTS CO., 1947 Flushing Ave., Brooklyn, N. Y.

DRY ICE FOR SALE

DRY ICE USERS! Can supply solidified CO_2 (dry ice) from carbon dioxide gas (CO_2) or would sell gas to parties desiring to manufacture their own supply from the pure carbon dioxide gas produced from our gas supply in Harding County, New Mexico. DANCIGER OIL & REFINERIES, INC., Fort Worth, Texas.

QUESTIONS

Electric Kitchens

No. 3062 (Manufacturer, Illinois)—"Have you any data you could let us have regarding the number of electric kitchens that have been sold complete, what company sold the most of them, and approximately how many and what cabinet companies are cooperating with the manufacturers in making cabinets, either ready made or custom built for this purpose."

Answer: The National Kitchen Modernizing Bureau declares that it is now gathering statistics on the number of all electric kitchens sold during 1936, but that such information will not be ready until some time in June. This information will be published in AIR CONDITIONING AND REFRIGERATION NEWS as soon as it is released.

As far as manufacturers of cabinets are concerned, the following are manufacturers of such equipment:

Whitehead Metal Products Co. New York, N. Y.
Mutschler Bros. Co., Napanee, Ind.
Kitchen Maid Corp., Andrews, Ind.
Elgin Kitchen Cabinet Co., Elgin, Ill.
Howell Furniture Co., St. Charles, Ill.

Manufacturers of other kitchen appliances are listed on pages 342 and 343 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Booklet on Selling

No. 3063 (Dealer, Texas)—"Will appreciate it if you will advise me how I may obtain a copy of 'Selling Points for Household Appliances,' a 24-page booklet published by the Porcelain Enamel Institute and referred to on page 13 of the NEWS for April 14."

Answer: Write to the Porcelain Enamel Institute, Inc., 612 North Michigan Ave., Chicago, Ill.

Glass Ice Cubes

No. 3064 (Dealer, Minnesota)—"Will you please advise where we may obtain information regarding the purchase of *glass ice cubes*."

Answer: Sneath Glass Co., Hartford City, Ind., advise that they are in a position to make these glass ice cubes if the quantity you need would justify their casting them.

Display Food Co., 128 East 10th St., St. Paul, Minn., tell us that they will sell glass ice cubes in standard sizes and in any quantities.

Trailer Refrigerators

No. 3065 (Distributor, Missouri)—"We understand that your publication carries information, etc., relative to refrigeration and we are wondering if you would be kind enough to forward to us such information as you might have relative to a cooling system to be installed in trailer coaches."

Answer: The Aerflo Co., 423 Reid Bldg., 138 Cadillac Sq., Detroit, Mich., manufactures a trailer refrigeration system.

Dealer Operating Costs

No. 3066 (Dealer, Ohio)—"We should like some information on operating averages. The approximate volume of the various appliances which we handle will amount to $110,000. The merchandise which we handle consists of one line of refrigerators, one line of gas ranges, two lines of washing machines, three lines of ironing machines, and six lines of radios (which will probably be cut to four lines when the 1938 sets are shown).

"Our question is this, can you give us a successful operation chart percentagely on the following items, together with any additional ones that you might think of:

1. Direct selling.
2. Indirect selling.
3. Office salaries.
4. Administration charges.
5. Rentals.
6. Supplies.
7. Maintenance.
8. Light and gas.
9. Service.
10. Postage.
11. Telephone and telegraph.
12. Dues and subscriptions.
13. Credits and collections.
14. Advertising, both direct and indirect.
15. Losses on account of bad accounts.
16. Miscellaneous.

"For your information, as far as service is concerned, we sublet all our radio service, and have no service on refrigerators, inasmuch as this is included in the dealer's price to us. Service on all other items we take care of ourselves, maintaining two service men, both furnished with cars, and at a weekly salary of $27.50 each.

"It is altogether possible that our request may seem a little bit involved so to reiterate what we actually want is a successful operation chart."

Answer: The best figures that we can give you on operating averages for electrical appliance stores are the Dun & Bradstreet retail surveys on operating averages. These give the averages in terms of percentages of gross sales for each of the expense items involved (of course, some of the items are grouped).

Figures from the Dun & Bradstreet retail surveys for the years 1933, 1934, and 1935 were published in the following issues of REFRIGERATION NEWS, respectively: March 6, 1935, Dec. 4, 1935, and Sept. 30, 1936.

'Northwind' Conditioners

No. 3067 (Manufacturer, Ontario)—"We have noticed on page 15 of your March 24 issue, some interesting information relative to the 1937 'Northwind,' manufactured by the Pleasantaire Corp., New York City.

"Would you mind giving us their address, as we should like to communicate with them."

Answer: See below.

No. 3068 (Dealer, New York)—"We noticed in your March 24 edition of AIR CONDITIONING AND REFRIGERATION NEWS on page 15 a picture and story on the North Wind portable unit air conditioner marketed by the Pleasantaire Corp. We would like to get their address so we can write them and get some information on this unit."

Answer: Main offices of Pleasantaire Corp. are at 304 East 45th St., New York City.

Use of Hermetic Units

No. 3069 (Manufacturer, New York)—"We are anxious to know some figures and to have some statistical information concerning the refrigeration trade.

"We understand that the General Electric and Westinghouse boxes are featuring the hermetically sealed unit. We also understand that Kelvinator are coming out with hermetically sealed units.

"Would you be kind enough to tell us from the figures you have available in your files, what was the proportion of the sales of 2,200,000 electric refrigerators in 1936; approximately how many of these units were of the hermetically sealed unit type?

"Also would you be kind enough to tell us if, in your opinion, the general trend of the trade is to standardize on hermetically sealed units?"

Answer: It is true that an increasing proportion of refrigerators have been built with hermetically sealed units during the past few years, but as the individual manufacturers do not make their figures public, we cannot give you the exact numbers or proportions.

For information as to the total number of actual manufacturers using hermetic units, please refer to the July 1, 1936 specifications issue of REFRIGERATION NEWS, which tells whether the leading makes use a hermetic or open type unit.

THE BUYER'S GUIDE

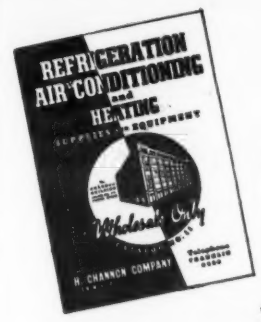
HENRY CARTRIDGE DEHYDRATOR

TYPE 74 REFILL CARTRIDGE

TYPE 744

Easy to refill as dehydrant cartridge can be readily removed and new unit quickly substituted. Dispersion tube for increasing drying efficiency and minimizing pressure drop is incorporated as integral part of refill cartridge. Strong spring provides positive seal of dispersion tube on inlet fitting, preventing by-passing of refrigerant. **Choice of 4 dehydrants at same price.**

HENRY VALVE CO. 1001-19 N. SPAULDING AVE CHICAGO, ILLINOIS
STOCKED BY LEADING JOBBERS



NOW READY ! ! !

CATALOG NO. 11

COMPLETE COVERAGE ATTRACTIVE PRICES

BE SURE YOU GET YOUR COPY

H. CHANNON CO.
133 N. WACKER DRIVE CHICAGO, ILL.

WRITE TODAY FOR OUR NEW 1937 AIR CONDITIONING COIL CATALOG

IMPELLED MOTION!

INSURES RAPID HEAT TRANSFER

THERMO FIN In Tube, is a twisted strip of perforated metal creating an unrestricted flow of refrigerant or thermo fluid inside the tube. The velocity increases as it proceeds through the tubes of your air conditioning or refrigerating coils.

THERMO FIN In Tube is a patented improvement over the ordinary fin coil and made only by Manufacturers Fin Coil Company.

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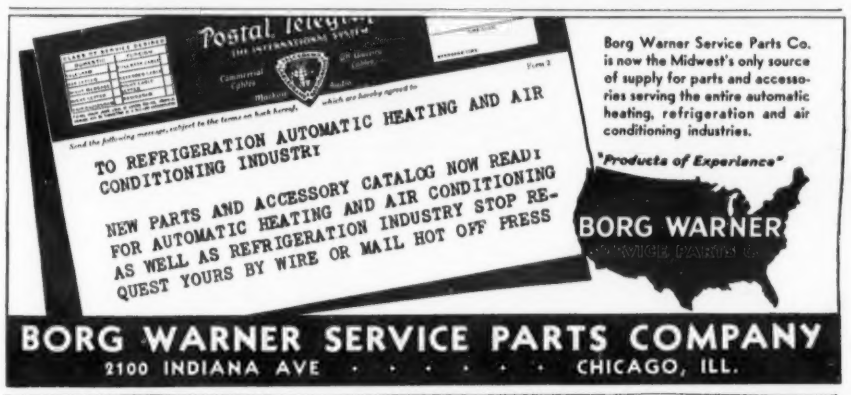
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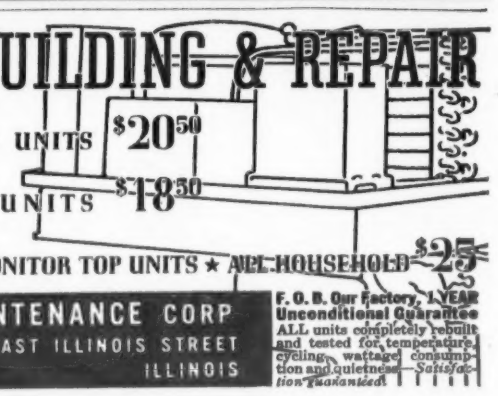

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